The Iron Age

A Review of the Hardware and Metal Trades

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Rolling Mill Engine for the Lackawanna Coal and Iron Company.

We present herewith an illustration of the rolling mill engine designed by Mr. Washington Jones, of Messrs. I. P. Morris & Co.'s West Richmond Works, Philadelphia, for the Lackawanna Coal and Iron Company's rolling mill, at Scranton, Pa. The engine, which is one of several to be made from the same drawings, and which will be found fully discribed in the following, may be considered an example of the best American practice in the construction of rolling mill engines.

SPECIFICATION—GENERAL DESCRIPTION.

Engines to be vertical, direct acting overhead cylinders, non-condensing. Heavy box bed plate, supporting two A frames, upon which the cylinder is mounted with the steam chest directly over the main shaft. Shaft pedestals cast separately and bolted to bed plate. Crosshead guides bolted to frames. Fly-wheel to have cast iron arms, and to be well bolted and keyed. Steam admitted by a single-ported slide valve having the pressure taken off its back, and with lap to cut off steam at three-fourths piston stroke. Its weight to be counter balanced. Eccentric rod with hook arranged to throw out of gear, so engine may be worked by hand. Governors to be placed immediately upon the steam chest. Hand gear, guides, and stuffing boxes to be reached from a gallery.

DETAILS.

Bed Plates.—To be of box form: length, 12 ft. 3 in.; width, 7 ft. 10½ in.; depth, 26 in., provided with facing pieces 1 in. high for shaft pedestals and feet of frames. Least thickness of metal, 1¼ in. Bottom of crank space to be cast in, and a pipe and cock provided to draw off the waste water and oil, to prevent injury by its settling into foundation. Bolt holes to be cast in. Vent holes where necessary. Top to be planed (facing pieces). Bottom flush, pedestals holding bolts to have their nuts inserted into pockets.

Holding-down Bolts.—To be 10 in number, 2½ in. diameter, and long enough for 10 ft. of mason work.

Frames.—A shaped; each leg of box form; thickness of metal, seventh-eighths of an inch. To be crossbraced and provided with facings for guides, rock shaft stands, &c., and with bosses for wrought iron diagonal braces. Feet to be planed. Top to be of proper shape for cylinder-seat, and to be planed. Bolt holes drilled, bolts turned. Their aggregate area to equal that of the pistop rod.

Cylinder.—To be of hard metal, composed of charcoal pig and hard scrap iron. To be bored 40 in. diameter, and for a piston stroke of 40 in.; least thickness, 1 in. Walls, 1⅛ in. thick; bottom cast in; steam chest cast on. Steam ports, 2¼ in. by 21 in. Exhaust ports 4⅛ in. by 21 in. Valve seat to be planed and scraped. Top flange turned and ground. Bottom flange turned and fitted to tops of frames, to which it is secured by 20 bolts of 1⅛ in. diameter.

Cylinder Head.—To be strongly ribbed; to have an annular recess for reception of piston follower bolts. Flange to be turned on top, on edge, and on joint, which latter must be ground. Eye bolts for lifting and joint bolts of 1 in. diameter, spaced about 7 in. from center to center.

Slide Valve.—To be of cast iron, close grain. Single-ported, and having sufficient lap to cut off steam when piston has completed three-fourths its stroke. To have pressure taken off its back by a saddle-plate. Face and back to have same dimensions. A plate to be cast in near the back surface, through which two holes of 1 in. must be drilled and tapped. These are to allow any leakage to pass into exhaust passage. Should leaks become great, or any other derangement occur to the saddle plate, it can be removed; the holes closed with screw plugs, and the valve work as an ordinary unbalanced one until repairs can be made. Stem of wrought iron. Length adjusted by nuts.

Piston.—To be of cast iron, and fitted with cast iron packing rings set out by springs, which must have proper set to force rings out. No screws to be used. Eye bored for rod and recessed for collar, top faced. Rings to be fitted and scraped on edges, follower turned and ground. Follower bolts provided with brass nuts. Clearance spaces ¼ in. at top and ⅛ in. at bottom of stroke.

Piston-rod.—To be of charcoal fagoted iron 6 in. diameter, forced into eye of piston and secured by brass nut and jam nut, fitted into crosshead with a slight taper, and secured by a cross key.

Crosshead.—To be of wrought iron. Composition gibs 3½ in. wide, 22 in. long (mixture: eight copper, one tin, one-half yellow metal) or of cast iron lined with Garrett metal. Pin worked from the solid, 5¼ in. diameter, 7½ in. long.

Connecting Rods.—To be of wrought iron fitted with straps, bolts, gibs, and keys. Boxes of composition metal (seven of copper, one of tin, one-half yellow metal) to be bored to suit pin of crosshead, 5⅛ in. by 7½ in., and crank pin, 7 in. by 9 in.; necks to be, upper, 5¼ in. diameter; lower, 5⅝ in. diameter; middle, 6⅛ in. diameter. Length, 8 ft. 4 in., or two and a half times the stroke.

Crank.—To be of wrought iron, tool finished. Eye for shaft bored 14 in. Two key ways, 3 in. by 1 in. Twenty inches from center to center. Pin of wrought iron, 7 in. by 9 in. Turned a little large for the hole, and forced in by screws and secured by nut at back of crank.

Shaft.—To be of close strong cast iron; journals, 16 in. diameter, 30 in. long; body, 21 in. diameter. End for crank, 14 in. diameter. Two key ways, 3 in. wide by 1 in. deep.

Shaft Pedestals.—Cast separately from bed plate. Box of cast iron lined with Garrett metal; diameter of journal, 16 in.; extreme length, 30 in. Bottom planed, cheeks and seat for box dressed. Cap bolts (two) 4 in. diameter, to serve also as holding down bolts, nuts at lower end to be inserted into pockets cast in bed plate. Nuts at top to be provided with keepers. Each corner of the cap to be provided with an adjusting screw, so that the cap cannot be forced too tightly upon the journal. Oil cup cast on.

Eccentric and Strap.—To be of close cast iron, with oil cup cast on.

Eccentric Rod.—To be of wrought iron with hook at upper end, so it can be disengaged. To have a catch for holding it in or out of gear.

Rock Shaft.—To be wrought and cast iron combined. To have a weight of cast iron to counterbalance the slide valve.

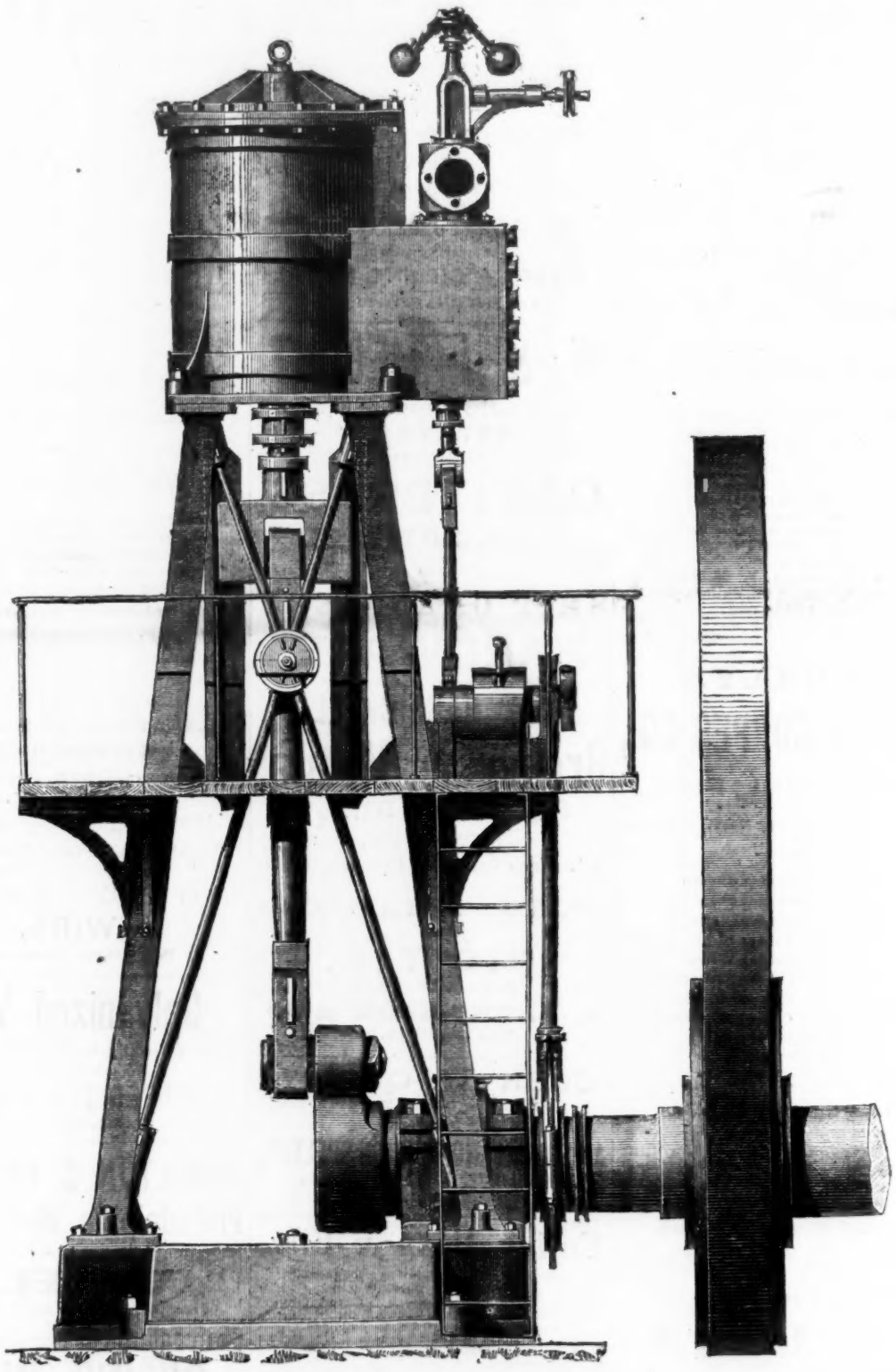
Valve Stem.—To be of wrought iron, with spade handle for link journal. Upper end screwed and furnished with double nuts for adjusting length.

Valve Link.—To be of usual style.

Fly-wheel.—Extreme diameter, 24 ft.; rim, 12 in. by 14 in. To be composed of eight arms and eight segments. Arm and segment cast together and to form one piece; joints of segments planed and secured by dowel pieces, 4¾ in. by 4 in., tightened by cross keys. Ends of arms to be turned to fit sockets of hubs, to which they are held by cross keys. Lugs to be cast at a suitable distance from ends of segments, through which the cross bolt holding ends of brace bolts pass; eight brace bolts, 2½ in. diameter, pass from these into hub, to which they are held by cross keys.

Center.—6 ft. diameter. Eye, 21 in. diameter, 20 in. long. Two key ways, 3 in. by 1 in. To have eight sockets bored 9 in. diameter, and faced for reception of arms. Bands of wrought iron, 3 in. by 3 in., shrunk on hubs, and bands of cast iron, 1½ in. by 2 in., shrunk on outer edges.

Governors.—To be of I. P. Morris & Co.'s make, *i. e.*, two discs attached by a bar moving into or out of two conical seats by the action of pendulums revolving at a high rate on certain of the engines. The other engines to be regulated by the Huntoon governor, *i. e.*, a propeller wheel working at a high velocity in oil contained within a cylinder.



ROLLING MILL ENGINE, BY I. P. MORRIS & CO., PHILADELPHIA.

MM. Bajot and Roche have submitted to the French Academy of Sciences for investigation their process for the manufacture of steel. They decarbonize cast iron by means of iron oxide in its native state.

A New Fettling for Puddling Furnaces.

Mr. Thomas Greene, of Darlington, and Mr. Thomas Ellis, formerly furnace manager for Messrs. Bolckow & Vaughan, have patented a new fettling process, which has been tested with the most satisfactory results at the Sherne Iron Works, Sheffield.

The new fettling is an oxide of iron made from pottery ore, which can be purchased at the present market value for 35/ per ton. It is applied to the bottom of the mill furnace as sand, cinder, or any other form of fettling. Being a pure oxide, it is free from silica, the most injurious enemy to iron, and there is thus no waste of iron, nor in the more advanced stages of the process is any loss allowed to take place. In order to carry on the fettling process under the altered conditions, slight structural alterations have to be made in the furnace; but it is calculated that an ordinary mill furnace can be altered to suit the requirements of the new fettling in less than three hours, and at a cost of about £1. The mode of alteration is very simple. Instead of the refuse coming out of the neck of the furnace, as formerly, it is allowed to run from the end before reaching the neck. The furnace is made to fall from the fore plate from one-half to three-quarters of a foot, so that the iron is allowed to lie upon a dry bed. The refuse thus gradually falls away in the descent toward the flue or end of the furnace, whence it is tapped into a "bogey." It is then removed to the puddling furnace, having previously been broken up into small pieces with one of Blake's stone crushers. It is calculated that the saving in the puddling furnace is from two to three-quarters of a hundredweight for every ton of iron, compared with any other fettling now in use. Experiments made at the Skerne works over a series of weeks have shown that a yield of 22 tons 12 cwt. of fettling was obtained from a charge of 11 tons 7 cwt. of ore. Under the old process all the difference between these two figures would be waste, worth not more than 1/ per ton; and it is estimated by Mr. Gibson, the manager of the Skerne Works, that the fettling improves instead of deteriorates the quality of the iron, which is even more valuable after it comes out of the furnace than before. For every heat drawn there is a tapping of cinder, which can either be tapped periodically or allowed to run continuously. The nature of the fettling is such that the more heat it is exposed to in the mill furnace, the stronger it is to resist the heat in the puddling furnace. The effect of this is to relieve the labor of the puddler materially, for instead of being obliged to fettle a furnace three or four times daily, as at present, one fettling is found to be ample. On this account the puddlers have taken to the new fettling more readily than they generally adopt an innovation on the established order of things; and now that puddlers are so independent, and have so much in their power, this is a point of no little consequence. Indeed, at the Skerne Iron Works the puddlers have hitherto successfully resisted nearly every attempt to introduce new appliances or modes of manufacture.

A correspondent writing from Sheffield says: The new fettling effects economy in a better quality and quantity of yield, in the consumption of fuel, and in the use of scrap. There are now four furnaces using the new fettling at the Skerne Works with striking uniformity of results. It is calculated that the saving by the new mode is not less than 12/ to 16/ per ton over all, and the patentees propose to charge a royalty of 1/ per ton of iron produced. It is proved that the new fettling is suitable alike for common and rotary furnaces, and Mr. Adam Spencer, of West Hartlepool Rolling Mills, proposes to introduce it in his rotary furnace. Several other firms are negotiating for its use, and many practical men who have seen it in operation are highly impressed with its advantages. I may add that in the Skerne furnaces the quantity of oxide used is 5 cwt. per 12 hours in the heating furnace, and about one ton in reheating. But the great merit of the new fettling is that it is immaterial, from an economical point of view, what quantity is used, because whatever is put into the furnace is got back again with interest.

Shipbuilding at Chester, Pa.—The Philadelphia *Press* makes the following mention of work in progress at Roache's iron shipyard: The Colima, a truly magnificient steamship, which is to run between Aspinwall and San Francisco, will be finished in June. She is a sister ship to the Colon, built by this company for the same trade, and which is now laying at New York city. Her length by load line is 294½ feet, and extreme length 312 feet. Extreme length of beam, 40 feet. Depth from hurricane deck, 39 feet, and spar deck, 30½ feet. Tonnage (old measurement), 2425. Mean draft, 18 feet. Two powerful steamers are being built for the Pacific Mail Steamship Company, to be used in the China trade. They belong to the largest class of vessels, their length being 421 feet, and a tonnage of 5000. Every care is being taken to make these vessels surpass any now in use in the Oriental trade; also, two others for the same company, which are 260 feet in length. Two steamers, which are rapidly approaching completion, built for C. H. Mallory's Texas line, are, respectively, 244 and 250 feet long. Also, two for the Reading Railroad Company, 196 and 218 feet in length. A vessel for Dickerson's line of 207 feet, and ferry boat—length, 192 feet; beam, 64 feet, for the Erie Railroad Company, to ply on the North River. There are many other vessels of smaller dimensions, which we will not occupy space in describing; suffice to say, that Mr. John Roach has certainly enough contracts on hand to occupy his entire force for more than a year to come.

Early last autumn a Danish company sent out an expedition to the Faroe Islands, to examine the coal beds there. The expedition, which was accompanied by Professor Johnstrop and a mining engineer from Silesia, has now returned to Copenhagen, with a report favorable to an extended working of the mine. The inhabitants have used these coals for a century. They are free from sulphur and other things which could be injurious to the fabrication of iron and steel. They are well suited for the production of cinder and coke. The situation of the coal bed is very favorable.

Elba is acquiring increased importance for iron ore. During the month of July, 1872, she exported 14,556 tons, of which 18,000 tons were sent to France.

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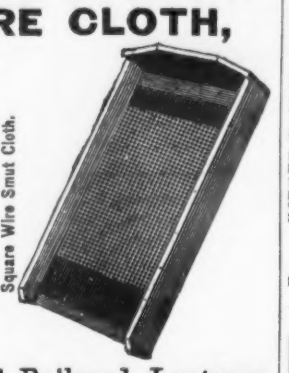

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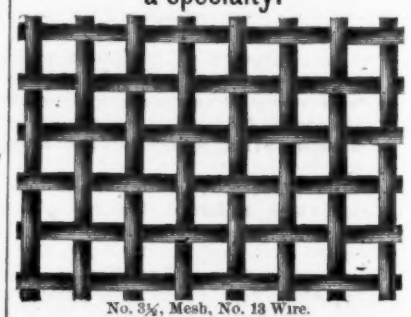

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No of Wire	Wt. per sq. foot	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.	No of Wire	Wt. per sq. foot.	Price cts.
10	3.47	40	11	3.20	38	12	2.80	35	14	2.43	33	16	2.00	30	18	1.39	30
11	2.75	32	12	2.45	31	13	2.15	30	15	1.97	30	17	1.47	25	19	1.08	25
12	2.10	26	13	1.85	25	14	1.62	25	16	1.51	25	18	1.11	20	20	0.76	20
13	1.61	22	14	1.41	20	15	1.31	21	17	1.10	20	19	0.85	18			

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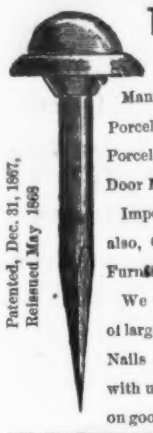

Patented, Dec. 31, 1867.
Reissued May 1868

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Hints on the Forging of Iron.

An interesting "blue book" has lately been published in England, containing much valuable information on the forging of iron, communicated to the government by eminent iron-masters in different parts of the country. The following is a brief synopsis of its contents:

With respect to the best mode of securing from deterioration the store of raw iron, the opinion is expressed that it should be kept under cover, and exposed as little as possible to the influence of moisture. The best iron is that which is most frequently worked, or which in the manufacture undergoes the greatest number of processes at a welding heat. But very superior iron, with the exception of charcoal iron, is produced from re-manufactured scrap and old iron; and, in order to ensure the most perfect workmanship in this important article, it is submitted that means be afforded in the dockyards for remanufacturing the whole of the suitable scrap and old iron which arises in the service. In some private establishments this is done with extraordinary care, and the result is a very superior article.

The cleaning of the scrap iron previous to manufacture is recommended to be done in the chain-cable cleaning machine as far as possible. By this means, not only will the scrap iron be perfectly cleaned, but the cleaning of the chain-cable will be facilitated by the increased attrition thus produced.

With reference to the means of producing sound smith's work, the most fertile sources of defects which from time to time have been experienced are: (1) The original inferior quality of the iron; (2) Improper treatment in the forging; (3) Improper treatment of articles of smith's work in actual service. With respect to the quality of the iron, that employed in the dockyards is generally of good quality, and only requires due care in its treatment to render the work produced therefrom equal to any legitimate duty required of it. With respect to the second cause of defects, namely, improper treatment in the forging; as this head refers to a very extensive class of defects, it may be proper to regard it, first, with reference to the nature of the forging; and, secondly, to the kind of coal used in the operation.

It being most important that every condition necessary for the operation of welding should be in the highest state of perfection, this requires that the iron should be at the right welding heat, rather than over or under it; so that, if any slight delay or impediment arise in bringing the parts together, there may be, as it were, a surplus of heat to work upon; and next in importance to this is, that as little scoriæ, or oxide, or other foreign material as possible should cling to, or interpose between, the surfaces about to be welded. As the welding of iron is accompanied by its combustion, and by the production of an oxide in a melting state, we must altogether get quit of this interposing material, as, ere the two pieces are laid together, it has a tendency to form as rapidly as it is swept or wiped off. But, very fortunately, in almost every case, if due care be paid to the form and manner in which the surfaces are presented together, the instant the blows are given to the parts in question, the interposing scoriæ is forced out, and the then perfectly pure surfaces of the welding-hot iron are so brought into intimate contact as to unite together and form one mass. There is no department of the art of forging more important than this, inasmuch as, in the majority of cases of defective welding, it is observed that the defect in question has arisen either from the scoriæ being shut up by means of improper forms of the surfaces, or that it has been insufficiently expressed from between the surfaces, for want of due energy in the blows of the hammer. That great attention should be paid to this is the more important and requisite, inasmuch as, in a great many cases, the system of "dab on" welding is unavoidable in the production of certain pieces of work; and as such "dab on" parts are generally subject to great and unfavorable strain, it is more than usually requisite to adopt the proper precautions, so as to secure the proper expression of the scoriæ and the intimate union of the surfaces.

Secondly.—On the subject of forging it may be proper to refer to the kind of coal used in that operation. Much evil arises in this process from the risk of viscid and sulphurous scoriæ clinging to the surfaces of the iron, owing to the use of raw or impure coal as the material for the smith's fire. If the coal were of a pure quality, namely, such as contain nothing but carbon and its ordinary bituminous accompaniments, the evil alluded to would be less felt; but as all coal contains, beside earthy matter, more or less of sulphur, a class of evils arises which is of a very serious nature. When we attempt to weld together two pieces of iron which have been heated in a fire formed of very sulphurous coal, not only is the quality of the iron damaged by being rendered brittle, but also its surface becomes covered with a certain substance which, in a very remarkable degree, destroys that adhesive quality which accompanies iron when at a welding heat. When this evil exists to excess, the parts will not unite, however much they may be hammered. But although such an extreme case as this is not frequent, yet it is a question of degree, and not of existence, so long as raw coal is used. It is therefore advisable for those fires which admit of it, slightly to carbonize the coal in a separate oven previous to use. This is the practice in most private establishments where the quality of the smith's work is a prime object. The practice should be discontinued of making notches in the scarphs of two pieces of iron about to be welded together, as such notches afford a lodgment for scoriæ, &c. Another extremely bad practice should be discontinued, namely, that of throwing a few fresh coals into a hollow fire on the hot iron, just before the heat is coming out. The use of air-furnaces prevents this.

It is recommended, also, to abolish cold hammering, unless the articles can afterwards be annealed, and to return all absolete unserviceable anchors to be worked up in the dockyards into wrought iron bars, &c., under the steam hammers and rolls. The committee appointed to investigate the several matters relating to iron &c. (including Mr. James Nasmyth), report that the result of their experiments clearly shows that very heavy strains, even to the extent of the breaking strain (that is equal to the strength of the iron itself) and this, even several times repeated, were found not only not to weaken the iron, but actually to increase its strength by every application. This conclusion is drawn from the following results of the several experiments:

	Mean Breaking Strain.
1st fracture	33⅛ tons.
2nd "	35¾ "
3d "	37⅛ "
4th "	40 1-6 "

"These facts," the committee says, "appeared so important, and were so much opposed to the opinion of the best informed persons upon the subject, that in order to prove beyond all question that the increased strength was due to the repeated previous strains, and not to the diminished length of the bars, we considered it proper to make experiments upon this point; we therefore took several bars of the same kind of iron, and of the same diameter, but varying in length from 10 inches to 10 feet, and found they were all equally strong. It may be proper to state the circumstances which usually attend the fracture of iron bars, namely: that considerable heat is evolved at the breaking place, and that the diameter of the bar is everywhere reduced, but particularly so at the place of fracture; but it is worthy of remark, that at the second and subsequent fractures of the bars it generally happened that little or no heat was given out at the place of fracture, and the general diameter of the bar was not again sensibly reduced, except in some instances at the place of fracture."

New Patents.

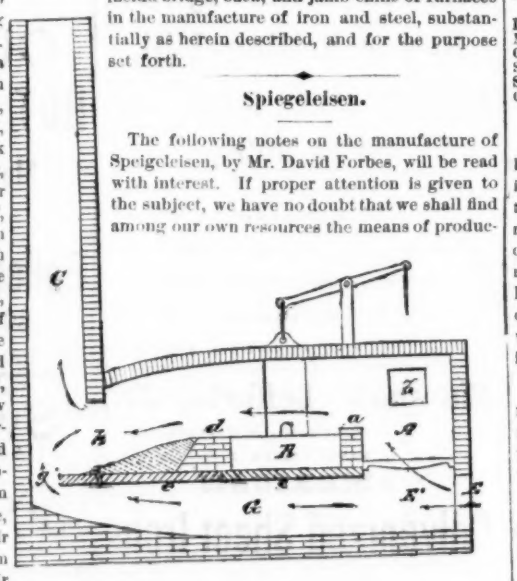
We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN PUDDLING FURNACES.

Specification forming part of Letters Patent No. 135,650, dated February 11, 1873, issued to Evan Lloyd, of Pittsburgh, Pa.:

This invention relates to an improvement in furnaces for boiling, heating and puddling iron; the object of which is to prevent the hearth-plate and the base of the chimney, or stack, from rapidly burning out, and also to greatly facilitate combustion of the inflammable gases in the furnace by supplying air thereto, thereby utilizing fuel and preventing largely the escape of smoke.

In the accompanying drawing, A represents the fire chamber, which is supplied with fuel through a feed opening, *b*. E represents the ash-pit below the grate bars of the fire-chamber, A, and E represents an opening leading into the ash pit, which opening will, in practice, be provided with a door, to which a register may be applied for regulating the admission of air. B represents the hearth, and *c* its bottom plate, which is between two transverse bridges, *a*, *d*, *a* being the fire bridge, and *d* the flue bridge. Beneath the hearth plate, *c*, and a plate, *e*, is an air conduit, G, which extends from the ash-pit openings, E, to the back wall of the stack, C, and communicates with this stack at its base by means of an opening, *g*. This will allow a current of air induced by the draft of the stack, C, to enter the stack at its junction with the flue, *h*, the effect of which will be to violently turn back the flames rushing through the flue, *h*, and greatly retard the escape of inflammable gases; at the same time the air, which is more or less heated in its passage through the conduit, G, will mix with the gases and allow them to be consumed in the furnace. The air which is conducted through the conduit, G, will absorb a large amount of heat from the hearth plate, *c*, and the plate, *e*, and thus, by keeping down their temperature, prevent them from rapidly burning out, and as the air impinges on the walls of the chimney at its base, these walls will be protected from the intense heat to which they are subjected in other puddling furnaces.



IMPROVED PUDDLING FURNACE.

In all other respects the furnaces may be constructed and prepared for work like puddling furnaces of the well-known kind.

Claim—The air conduit, G, arranged beneath the hearth, and communicating with the chimney, or stack, at the base thereof, for the purposes and in the manner described.

IMPROVEMENT IN FURNACES FOR MELTING BRASS AND OTHER METALS.

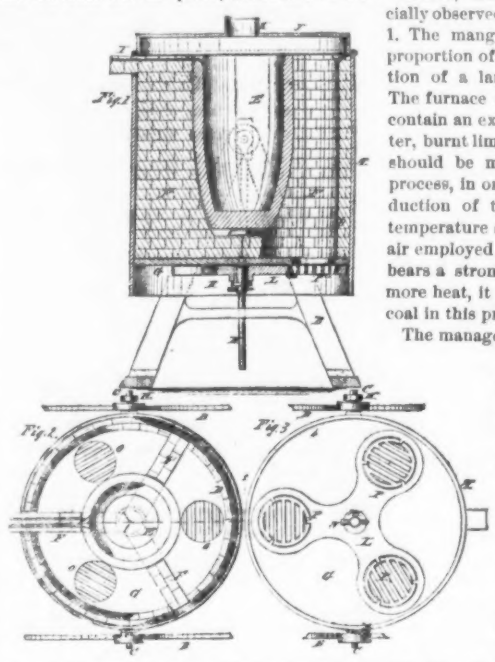
Specification forming part of Letters Patent No. 135,967, dated February 18, 1873, issued to Ira D. Rush, of Detroit, Michigan.

This invention consists of a rotating grate-frame, constructed and arranged in a furnace, substantially as hereinafter described and claimed.

Figure 1 represents a vertical section of the furnace with the crucible, in plane, the section being taken on the line *x x* of Fig. 2. Fig. 2 is a top view with the cover off the furnace. Fig. 3 is a bottom view, showing the movable grate-plate and grates.

A is the furnace, which is supported in the frame B on the trunnions C C. D is the furnace-lining. E is the crucible, in which the brass or other metal is melted. F represents partitions. H is a lever; and I is a spout from the mouth or lip of the crucible on top of one of the partitions. J is the furnace-cover. The chimney-pipe is attached to the collar K. L is my improved grate frame or plate, confined to the under side of the furnace bottom on a central pivot, M, and pin N. There are three, more or less, air ports, O, in the bottom of the furnace, one for each space or compartment in the furnace between the partitions. Each of these apertures is provided with a removable grate, P, either attached to or cast with the rotating grate plate or frame L.

By turning the plate the grates are readily removed from the air ports, which allows cinders and refuse to be discharged during the process of melting.



IMPROVED FURNACE FOR MELTING BRASS AND OTHER METALS.

Claim.—The rotary frame L, having grates with ports O P, arranged on a pivot, M, in furnace, as and for the purpose described.

IMPROVEMENT IN FETTLING FOR PUDDLING AND BOILING FURNACES.

Specification forming part of Letters Patent No. 136,083, dated February 18, 1873, issued to James C. McAninch and George Atkins, of Youngstown, Ohio.

This invention consists in an improved preparation of ground sand rock for fettling or fixing puddling or boiling furnaces for manufacturing iron or steel. This preparation is formed of pulverized sandstone mixed with a sufficient quantity of water or other liquid or liquids to reduce it to the consistency of mortar. The preparation is placed around the inside of the furnace against the bridge, back, and jamb-chills to protect said parts and keep them from coming in contact with the iron, and from being injured by the intense heat.

The preparation is designed to take the place of the iron ore heretofore used for this purpose.

Claim.—An improved preparation formed by mixing pulverized sand stone with sufficient water or other liquid or liquids to reduce it to the consistency of mortar, to be applied to the inside bridge, back, and jamb-chills of furnaces in the manufacture of iron and steel, substantially as herein described, and for the purpose set forth.

Spiegeleisen.

The following notes on the manufacture of Spiegeleisen, by Mr. David Forbes, will be read with interest. If proper attention is given to the subject, we have no doubt that we shall find among our own resources the means of producing this new necessity, the want of which has retarded the progress of steel manufacture by the Bessemer process in this country:

Spiegeleisen is produced from ores of very different and peculiar characters. In Germany it is solely the spathic iron ores containing manganese which are used. In Russia manganese oxides containing iron are the source; while in Sweden a mixture of knebelite and manganiferous garnet (combined silicates of iron and manganese) are fluxed together. There is one point of great importance with all these ores, viz., that if the iron and manganese oxides are not actually combined as carbonates and silicates, they are, nevertheless, in a state of very intimate mixture. Whenever attempts have been made to obtain spiegeleisen rich in manganese, by the addition of manganese ores to the charge in the blast furnace, either the result has been altogether a failure, or at most but a small fraction of the manganese has combined with the iron, by far the larger portion of it being carried off in the slag.

In order, therefore, to produce pig iron containing a large percentage of manganese, it is absolutely necessary that the addition of the manganese must be made in the form of some compound containing iron, the probable reason being that the reduction process is thereby facilitated, since a mixture of the oxides of manganese and iron is more easily reduced to the metallic state, and is thus enabled to unite with the iron of the main charge. With manganese alone the great tendency of the metal is to pass into the slag in the form of a silicate, from which its recovery is exceedingly difficult. This may be in some measure prevented by causing the heat of the furnace to be very great, and its reducing power as perfect as possible. The oxides of manganese are much less easy to reduce, and require a longer time and a higher temperature than do those of iron.

Hence, the following rules should be especially observed in the production of spiegeleisen: 1. The manganese ore must contain a large proportion of iron, in order to secure the reduction of a large proportion of manganese. 2. The furnace charge should be basic, i.e., must contain an excess of limestone, or, what is better, burnt lime. 3. The draught of the furnace should be much slower than in the ordinary process, in order to give more time for the reduction of the manganese. 4. The furnace temperature should be as high as possible, the air employed as hot as possible; and as coke bears a stronger pressure of air and develops more heat, it is to be preferred to wood charcoal in this process.

The manager of Swedish iron works, Mr. A Keiller, states that he once produced a product containing 15 per cent. of manganese with only 2·5 per cent. of carbon, but not possessing the well known appearance of spiegeleisen—this was objected to in the market. One of his pigs contained 23 per cent of manganese, with only two per cent. of carbon. According to Mr. Henderson, of Glasgow, the carbon diminishes in proportion as the manganese increases in the alloy; with 30 per cent. of manganese the carbon mixing down to 0·25 to 0·40 per cent.

In Fliipstad, in Sweden, spiegeleisen has been made by using native oxides of manganese, especially Hansmannite, which contains 72 per cent. of manganese; but, in accordance with the views above expressed, the result showed a great waste of manganese, the iron containing only four per cent., the remainder of the metal passing away in the slag.

The ores employed in Germany for the manufacture of spiegeleisen are found in veins of Devonian formation, on the east bank of the Rhine. They are spathic iron stones, consisting of carbonate of iron intimately mixed with carbonate of manganese. They also contain more or less copper and iron pyrites, traces of galena and zinc blende, and frequently quartz.

Analyses of produce of three different mines are as follows:

	Stahlberg. ℔ cent.	Kirschenbaum. ℔ cent.	Huth. ℔ cent.
Iron	41·70	42·58	42·21
Manganese	8·16	6·46	8·70

The well known foliated texture of spiegeleisen depends not on the amount of manganese present, but on the percentage of carbon in the iron. This structure is also better developed if the iron, after running off, is covered over with slag, so as to allow it to cool more slowly.

The analyses of two samples of German spiegeleisen, given below, show the percentage composition as manufactured with coke.

	1.	2.
Iron	85·929	86·74
Manganese	8·706	7·37
Copper	0·219	0·16
Sulphur	0·015	0·08
Silicon	0·458	0·41
Carbon	4·129	5·04

A cement of great adhesive quality, particularly serviceable in attaching the brass mountings on glass lamps, as it is unaffected by petroleum, may be prepared by boiling 3 parts of rosin with 1 part of caustic soda, and 5 parts of water, thus making a kind of soap which is mixed with one-half its weight of plaster of Paris. Zinc white, white lead, or precipitated chalk, may be used instead of the plaster, but when they are used the cement will be longer in hardening.

The State Mineralogist of Wisconsin announces that there is enough iron ore in the neighborhood of the Black River Falls to supply the whole demand of the United States for the next ten centuries.

Twenty-five thousand dollars have been subscribed by the citizens of Hackettstown, N. J., toward the erection of a blast furnace at that place.

The San Diego, Cal., foundry, the first established there, recently began work. The melting capacity of the furnace is 8000 pounds, and the fuel used is Pennsylvania coal, costing there $25, gold, per ton.

The car-spring patent of the Middleton Car-spring Company, of Philadelphia, has been extended by the Commissioner of Patents from the 15th of February, 1873.

Three boilers at Orange furnace, Jackson county, Ohio, exploded Sunday night, March 9th, damaging adjacent buildings and hurling the hot-blast boilers 200 yards from their beds. Two men were seriously injured.

The Cleveland *Commercial Review* says that it has been discovered that distinct veins of coal, ranging from 12 inches to five feet in thickness, underlie the whole State of Kansas.

Certain salts—such as the alkaline nitrates or chlorates—are applied in England, by Mr. R. Eldson, to the conversion of cast iron into wrought iron or steel by causing them to act upon the upper surface of the molten pig iron, which is placed in a peculiar syphon-shaped converter.

The St. Louis weekly *Times* states that the four foundries at Quincy last year cast $530,000 worth of stoves, and paid out in wages $156,000, and for pig iron $205,000.

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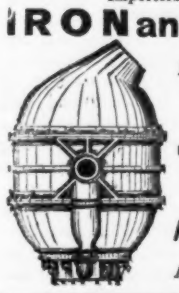
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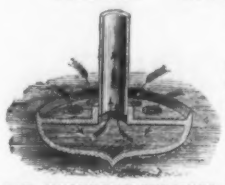

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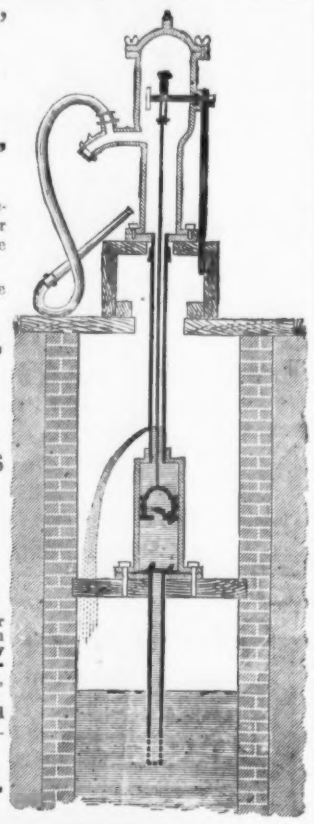

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The Mechanical Adaptation of Steam Power to the Movement of Canal Tonnage.

The following is the conclusion of a paper read before the New York Society of Practical Engineering, on the evening of March 19th, by Mr. James C. Bayles. We regret that our limited space does not permit us to comply with the requests to publish it in full, which have been received from many friends interested in the subject of which it treats:

The problem which presents itself for immediate solution is the mechanical adaptation of steam power to the movement of tonnage now afloat, and under existing conditions, by means calculated to overcome the heavy resistences of canal boats. In my judgment, this can only be accomplished by some method of traction, which will move loaded boats in trains at a speed of not less than three miles an hour, and with enough boats to a train to make the system economical as compared with the system of moving single boats by horses. This requires no reduction in the carrying capacity of boats, no expense for alterations of any kind; nothing, in fact, but that the boats shall be attached to the object which furnishes the traction power, and be moved as cheaply, if not more cheaply, considering the saving in average running time, than they can be drawn by horses. There are, I think, no differences of opinion as to the advantages of such a system of train movement, supposing it to be practicable, over any system of automatic propulsion yet suggested, and the questions of interest which I shall venture to discuss briefly, are, whether train traction is possible at all, and if so, can steam power be so perfectly adapted to this service as to develop an economy over horses.

That train movement is possible upon the canal was demonstrated prior to 1862, when the Governor King, screw propeller, towed five boats in train the entire length of the Erie canal. And yet experience has proved that the screw is not adapted to canal navigation. Train traction, therefore, is possible; can it be made economical as well? This can be determined only by intelligent experiment with new and hitherto untried methods; but I am disposed to believe that American inventive talent is equal to the task of solving a far more difficult problem than this appears to be.

Can economical traction power for boats in trains be furnished by engines running on the tow path? I think not. Narrow gauge railways on the towpath and locomotive traction cannot properly meet the requirements of our canal traffic for the following reasons:

1st. For want of sufficient adhesion—except with very heavy engines—to prevent a sliding friction due to the angular pull upon the heavy resistance of a train of boats. Unlike the locomotive drawing a train of cars, which offers resistances only in its line of travel, the tow path engine must overcome resistances which are never in its line of travel, except for brief intervals in passing curves; and this obliquity of a heavy pull upon a heavy resistance tends to produce a lateral slip on the rails, resisted only by the rear pair of wheels. Such a slip would be fatal to the durability of either rails or wheels.

2d. Because of the increased resistance to the train, due to the heavy oblique pull upon the boats. It should be mentioned that steam traction from the canal bank necessitates the use of a hawser of from 150 to 200 feet long, and the line in which the boats move cannot average less than fifty feet, to the right or left, according to direction of the line of travel of the motor; for the forward boat of the train must lay well over to the berme side for safety. Therefore, to throw the leading boat of a train into a parallel 50 feet from the line of travel of the motor, with a hawser, say 150 or 200 feet long, when the motor is exerting a tractive power equal to that of 30 or 40 horses, is one of the difficulties not yet overcome, and one of the increased resistances not yet provided for by the advocates of locomotive traction for canal tonnage. I do not need to tell those familiar with canal movements, that the pull of a single train of horses, moving at their usual snail's pace, is often intermitted to enable the pilot to "lay over" and handle his boat safely; and with an oblique steam pull equal to ten or fifteen teams of horses, and the steerage of the leading boat hampered by the resistance of the boats trailing behind it, it is not probable that much headway could be made because of the frequency with which the traction engine must be stopped to enable the boats to be got into proper position.

3d. Because it would be necessary to lay tracks on both sides of the canal, to avoid the difficulties and delays which must be experienced when two engines should meet while hauling trains in opposite directions. Horses in meeting start at once with the line of the outside boat taut under the bottom of the inside boat; but this could not be done in the case of locomotive engines on parallel tracks. In such a case the heavy hawser of the outside motor must be detached, carried under the inside hawser and dropped on the bottom of the canal until the inside train of boats had passed over it. Under such circumstances the outside train of boats would loose steerageway, and if it consisted of light boats it would take only a very moderate wind to render them wholly unmanageable.

Again, trains of boats meeting on curves would both be held powerfully to the railway bank, so that the outer train must rely wholly upon its momentum to carry it over to the berme side—and light boats, especially with adverse winds, would not have momentum enough to carry them through, as the broadside of a canal boat presents nearly a thousand square feet of surface to the wind.

4th. Because of the impracticability of handling long trains of boats under an oblique traction: a difficulty which does not need further illustration than is furnished in the foregoing remarks. From these and other considerations it is evident that traction service cannot be well performed by locomotives on the bank; and not at all, practically, unless we have a railroad on either side.

I have mentioned, as yet, only some of the engineering difficulties of train traction by steam from the canal bank: but were these difficulties overcome, there remains the impossibility of establishing an economy with locomotives as compared with horses.

The interest on the cost of suitable railways, with a requisite equipment of 350 engines—which is the minimum number required to do the work now performed by horses—would exceed the entire present cost of towage by horses. This statement is based upon a careful calculation, which I will not now stop to make. Hence, relatively, the running expenses of the 350 locomotives would represent the net loss resulting from the substitution of steam for horses.

It has been suggested that the requisite traction power could be economically furnished by steam carriages running on the tow path. I have heard that very good results were attained in experimental service with a Williamson road steamer, but my inquiry and observation lead me to believe that such engines could not be practically employed in this service with advantage, in competition with horses. The tow path is seldom in condition to afford a good roadway for engines of this pattern, and to render it adapted to the travel of heavy road steamers would involve a great expense for improvements and maintenance.

From a long and careful study of the question of how steam power can be at once mechanically and commercially adapted to the movement of canal tonnage, I am satisfied that the best way, if not the only way, will be found in the use of tugs possessing sufficient engine power to do the work required of them, and utilizing that power by some method of paddle construction that shall waste nothing by spiral or cycloidal, and but little, if any, by recession slip. We must have something which takes a stronger hold upon the water than the screw, and more hold upon it than the paddle wheel, both of which have failed in all their numberless modifications. We must remember, however, that mechanical applications which succeed in river navigation fail on the canal:

1st. Because the resistance to motion encountered in the limited waters of the canal is greater than in the ample waters of the river.

2d. Because the locks and bridges restrict the size and limit the power of the tow-boats. The large and powerful tugs which do such effective service on the Hudson River cannot run on the canal, and small tugs which can have not sufficient power in their propelling machinery to establish either economy or dispatch. This is true of all steamers built especially for canal service that were tested up to the close of navigation last year. Practically, they are as unfit for the service for which they are designed as a dog is for swimming. The dog has muscular power enough to make him a good swimmer—so the steam canal boat has, or may have, an abundance of engine power: but the dog has an insufficient hold upon the water—so have the little steamers from which so much has been expected, and by which so little has been accomplished. The canal boat to be towed, has a full tow displacement of over 100 square feet immersed area of section: the boats which have attempted to tow it have only about a dozen square feet area of effective pressure. Therefore, the screw tug, for example, with two, three, four or five boats in train, works to the same disadvantage that a man would who should stand in a large boat and attempt to push himself from a small one that runs away from him. The boat which does effective traction service on the canal must have a larger area of effective hold upon the water than has yet been provided. In my judgment, its propelling blades should act directly upon the water like the blade of the oar in rowing. The mechanical simplicity of the principle of the ore develops all the power at one end that is put into it at the other, less the slip of the blade; and what is needed for the canal is a system which shall get out of the paddles, whatever their shape or arrangement, all the power of the engine less what is lost by a minimum recessional slip. The screw and the paddle wheel are too wasteful of power. They have been fairly, fully and repeatedly tested, and the only chance of success lies in the invention of some system of propulsion radically new, which shall put the engine power into the movement of the boat as effectively as the oar puts the power of muscle into the propulsion of a skiff. This I consider the true problem to be solved in effecting the mechanical adaptation of steam power to the movement of canal tonnage.

Chinese Labor at Beaver Falls—A "Tempest in a Tea Pot."

A few evenings ago an excited meeting was held in the public hall at Beaver Falls, Pa., to discuss the question of permitting the Cutlery Company of that place to continue operations with Chinese labor. The following are the resolutions adopted:

Resolved, That the answer from the Harmony Society, at Economy, to our delegation of one hundred and ten persons, who visited them a few days since, is not what we hoped for and expected.

It states that they favor Chinese labor in the cutlery works on the ground of necessity, and also because such labor has become more frequent in other parts of the country.

That they have been unable to find the directors of the Cutlery Company have violated any law, or any right of any party, and that if there be such a case the courts are open to decide upon it.

Our reply to this portion of their answer is that a direct commencement has been made by the Cutlery Company to overthrow our present system of labor, to drive the workingmen, like the poor Indians, westward before an advancing Asiatic army of inferior workmen, and ere long, if continued, to make the poor poorer and the rich richer.

It is the beginning of a calamity before which all the woes we have ever known will bear no comparison.

We are at present not prepared to say that any law now standing on the statute book has been in this case violated, as we do not know all the particulars regarding the contract made by the Cutlery Company for the Chinese.

There is a law, however, graven on the hearts of Christian men which no human power can ever repeal, guaranteeing that the Christian domain shall never be usurped by the heathen.

We would like that some peaceful mode would be devised by which every Chinaman in the land brought here under contracts for a term of ten years could be sent home. Such an accomplishment would relieve the public mind, and in due time pluck from the memory a rooted sorrow.

Our cause is not confined to the limits of Beaver county, it covers the whole Union. It further states, that the Harmony Society would be willing for the Cutlery Company to dispense with Chinese labor if convinced that it was wrong, but fear to do so because, as they think, another evil would necessarily follow.

Our reply to this portion of said answer is, that we consider it wrong to employ Chinese labor because it debases white labor; cheap labor means debased labor. And we consider it the true interest, both of capitalist and the nation, to elevate the workingman—not to degrade him.

It further states that because they have been accused of seeking for lucre only in supporting the operations of the cutlery company, they propose to give their share of the earnings of the establishment for the next eight years, if so long owners therein, for the support of mission schools, the poor, etc., keeping Beaver Falls particularly in view.

Our reply to this part of said answer is that the proposition wears upon its face a desire to do good, and we have no doubt of the pure intentions of the Harmony Society in making the offer; but, alas, such earnings, if earned at all, would be at so terrible a cost—the lowering of the white operative—that we cannot think any religious body would accept the proffered gift.

It further states that if there be any white employees who worked in the cutlery, who have been wrongfully discharged and thereby suffered loss, that such cases may be properly and legally made to appear before a court of justice, and that they (the Harmony Society) will make compensation in case the Cultery Company is unable to do so.

Our reply to this part of said answer is, that many are prepared to make affidavit that they were discharged by a gradual reduction of wages.

The destruction of the poor is their poverty, and the process of discharging white men from the cutlery works has been by reducing wages so low that they could not thereby support their families.

It further states that if it can be shown to them that any rights have been violated in the employment of Chinese, by proper and legal authority, they will insist on their immediate removal.

Should, however, any violent measures be resorted to, in violation of the rights of the company, that they will withdraw all their means from the place.

Our reply to this part of said answer is that we have already stated the process by which discharges were made.

As for the supposition that violent measures might be resorted to, we reply that our intention has ever been to show our opposition to coolie labor in a proper and legal manner, to discountenance violence.

Although the answer given us by the Harmony Society is not what we expected, we still hope they will consider it, and after due consideration reach the conclusion we have reached, that it is not to degrade labor.

Resolved, That the Harmony Society's answer to the citizens of this place is so far from what any good people could expect, and so unsatisfactory in its terms, we as citizens and workmen protest against the answer, from first to last, as being in direct opposition to labor in all its various branches, and ruinous not only to this place but to the whole country generally, and that while we deprecate any act of violence, we pledge ourselves that we will never cease to agitate the question while there is a coolie in Beaver county or in the whole country, and we, as workmen and freemen, know our rights, and knowing, dare maintain.

The resolutions were unanimously adopted.

Dr. Garrett offered resolutions providing for the formation of a league, not to buy from any merchant that patronizes and encourages Chinese labor; and for a mass convention.

Dr. Garrett again addressed the assemblage, taking strong grounds against the Chinese labor.

These and other resolutions, including one proposing an act to levy a tax on all who employ contraband labor, were adopted, after which the meeting adjourned, to meet again at the call of the chairman.

Pipe Fire-Extinguisher.—The president of the New York Board of Fire Commissioners has ordered, for a test, a plan to put out fires in the highest buildings by means of two-inch wrought-iron pipe, made with sockets into a tube of any length desired, the upper end to have a nozzle at an angle, the lower end to have two hose connections, and to stand on two adjustable legs, by which the stream may also be diverted to any point. The tube is quickly raised by means of light forked poles and small guys, and is thrust through a window, or extends above the roof if the fire is on top, and stands sloping from the ground, resting against the building. It is claimed that by means of this pipe large quantities of water can be forced or pumped by fire engines into the highest buildings, and especially during a windy time, which can not be reached even with a small quantity with the present apparatus.

A company is organizing in London for the purpose of establishing telegraphic communication between Europe and Brazil. It is proposed to lay the cables of this company in three sections, the first from Lisbon to Maderia, 653 miles of cable; the second from Madeira to St. Vincent, 1260 miles; the third from St. Vincent to Pernambuco, 1953 miles. The first section is intended to be laid in July next, the St. Vincent section in September next, and the final section in May, 1874. The cables are to be of the best construction, with improvements on the types of the Atlantic cables, and the contractors purpose employing the steamship Great Eastern in laying the deep-sea portion of the line.

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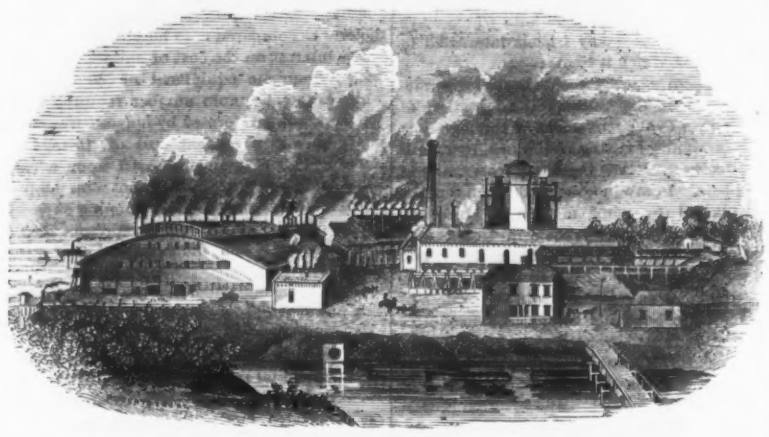

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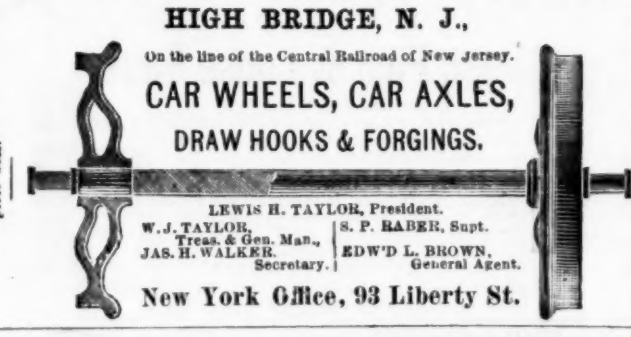

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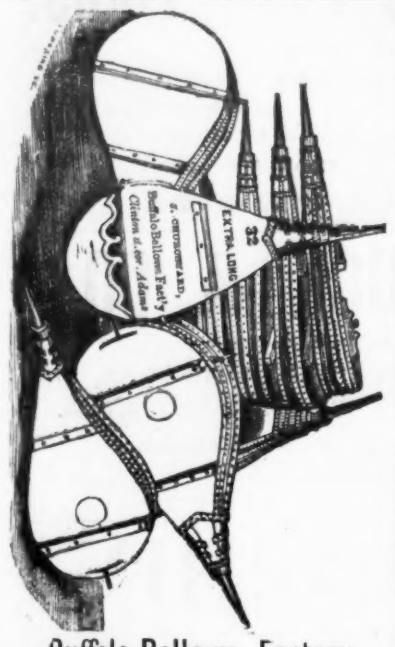

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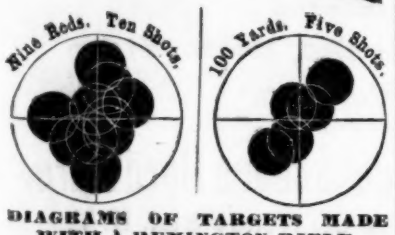

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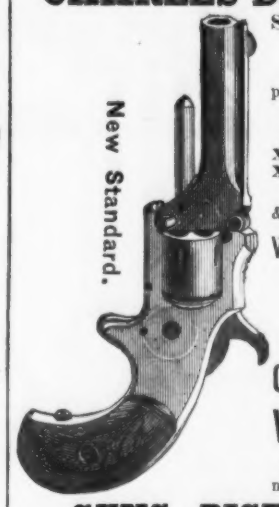

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Lewis' Patent Bolt Machines.

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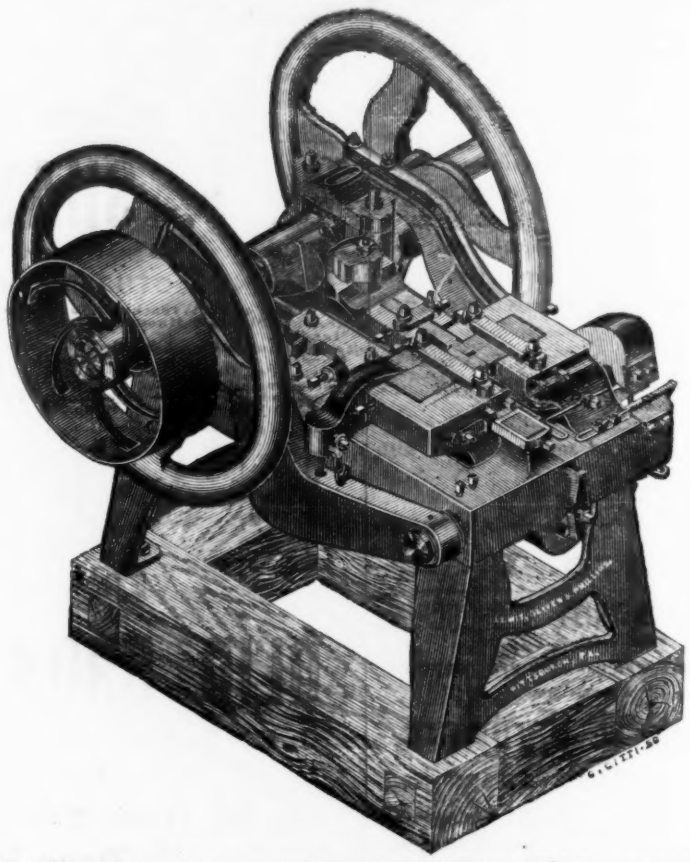

This machine can be changed from making Square, Round or Hexagon Heads to splice Bar Bolts, or any kind of Rivets, in five minutes, and is the only machine known possessing these advantages. It will do more and better work in a given time than any other in the country.

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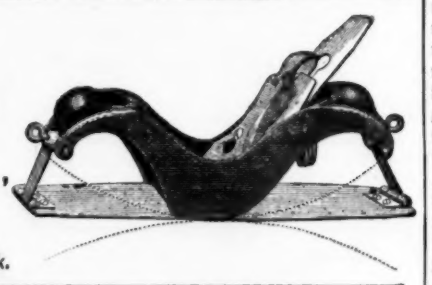

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Self-Righting Cuspadore,

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FOOTE'S PATENT LOCK UMBRELLA STAND.

The Metric System.

To understand fully the metric system of weights and measures, as well as to appreciate its importance as a basis of international, commercial and financial exchanges, it is necessary to trace its history. In the sixteenth century, Christian Huygens suggested the pendulum as the universal basis of linear measure. This basis may be briefly and simply described as the length of a clock pendulum, of which the vibrations would correspond to intervals of secouds of time. At a first glance this would appear to be a very reasonable standard; but it must be borne in mind that the action of gravitation varies at different places, owing to the irregularity of the earth's form, and creates therefore corresponding variations in the times of vibration; and that consequently the basis of the pendulum, for all practical purposes, is a most difficult and variable one, from which to calculate. Prior to Huygens' suggestion various complicated measurements had been made by Jean Farnel, Wellebrord, Snellius and others, with a view of taking a defined portion of the dimensions of the globe as the basis for a uniform system. Later on, it was determined, after various experiments, that the length of the toise should be the legal measure in France. Following this came the discovery of Delambre and Mechain, that the length of a quadrant of the meridian, as determined by a measured arc from Dunkirk to Barcelona, was ten million metres. The metre, so called from the Greek word *metron*, a measure, was based on the measurement of the earth from pole to equator, in the meridian of Paris. The 10,000,000th part of the distance is taken as the unit of length, or the metre. Toward the latter part of the seventeenth century a law was passed in France, definitely fixing the length of the metre, and this law was the first germ of the metric system which is now used among four hundred millions of people.

Up to the year 1816, Great Britain had not moved much in the matter, but in that year Sir James Stewart brought the pendulum theory before the House of Commons, who sanctioned the principle. From that time to the present the interest in the general subject of the reformation of our present cumbersome methods has gradually increased.

A brief glance at the anomalies now in existence will place the necessity for an universal system more clearly before our readers. At the present time we have various weights where one would be sufficient, such as avoirdupois, English, Scotch and Dutch troy, wool, apothecaries', diamond, and a variety of other customary weights too numerous to mention. When we come to measures of length and capacity, the variety is still more perplexing. Locality, also, has not been without its influence. Take, for instance, what is known as a fother of lead. In London it weighs 19½ cwt., and in each of the towns of Hull, Newcastle, Chester and Stockton, a different weight is in existence. It will be seen, therefore, that even in this country, to say nothing of other parts of the world, the advantages to be derived from the adoption of the metric system are not a few. To those having trading intercourse with foreign countries, both time and money would be saved by its adoption. The correctness of this statement may be judged from the fact that the trade of the United Kingdom with countries now using the metric system amounts to nearly 70 per cent. of the whole trade of the country. Foreign clerks could, to a certain extent, be dispensed with, and establishment charges thereby reduced. Business transactions, especially those with foreign countries, would be conducted with greater rapidity, and a great saving of time thereby effected to all parties concerned.

We are aware, however, that all would not be plain sailing. The introduction of the system would, in common with all great innovations, naturally bring a great many disturbing elements, and a certain amount of expense, in its train. New weights and measures would have to be used, and in the infancy of the change many annoying blunders would crop up, especially in the retail trade. This, however, would gradually remedy itself. We do not argue that the system should be at once adopted, but we think it is a growing want of the age. The Associated Chambers of Commerce, and also the London School Board, have taken the matter up, and thereby paved the way. All this, however, will be useless, unless an act is passed making the system compulsory at some distant day. Then the minds of the public will be prepared for the change, and as the matter affects every class of the community, each one would naturally prepare for the innovation. Now that the attention of Parliament is again to be directed to this matter, as we see from the proceedings of the House of Commons, it is to be hoped that the basis at least of a proximate future reform herein may provisionally be laid.

There are, undoubtedly, two distinct aspects of the question. One, the scientific, in which all is plain sailing and favorable; the other, the popular, in which all is apparently complicated and beset with difficulty; and, as in most great questions, some compromise, or mode of satisfying the requirements of both, may be sought for and found.

While admitting that the metre is by no means the best, most invariable, or most suitable basis that could be devised or adopted, yet there are not wanting considerations indicative of the policy of waiving such general objections against it. On the one hand, there is no prospect of obtaining any retrogression on the part of the many countries and nations among whom the metric system now prevails; on the other, there are so many anomalies in our own system that we at least are in no position to throw stones at any house, however vitreous. The alternative before us, then, is that of isolation or assimilation, and the balance of advantage clearly lies with the latter. Like the break-of-gauge-question in India, there is something to be said on the other side; but if we are to wait for reform until some scheme be advanced that shall command the suffrages of all, the present generation, and many more after it, will be improved off the face of the earth before the desired improvement be attained.—*Iron.*

The Secretary of the Navy invites manufacturers of steam machinery to send proposals till May 1st, 1873, for the construction of steam machinery for vessels of about 185 feet in length by 35 feet in breadth, with one screw; each vessel to have one pair of engines, with surface condenser, and coupled to one crank-shaft. The boilers to be cylindrical and of the best charcoal iron with composition tubes, and with a strength of 80 pounds pressure to the square inch. The screw to be of copper and tin if the vessel is built of wood, and cast iron if the vessel is built of iron. The screw to be 12 feet in diameter. There must be two auxiliary pumps, and a fresh water distiller with a special pump, and all other machinery necessary for steaming the vessels. The coal bunkers must have a capacity of 160 tons. The engines to have 800 horse-power. The weight of machinery, including boilers, etc., must not exceed 215 tons. At the same time proposals for steam machinery for a vessel 150 feet long and 32 feet in breadth, 560 horse-power, and gross weight 175 tons, will be received. This machinery is intended for the smaller class of war vessels authorized by late act of Congress.

The use of bronze for field artilery, which had been reintroduced in Prussia in 1869, has again been entirely given up in favor of steel. The new field gun will differ in several respects from the old one. In the first place, the caliber will be proportionably less; that is to say, the gun will combine the length and weight of metal of the heavy field gun with the caliber of the light one. The projectile weighs about 15½ pounds, is longer than the old one, and is propelled by a charge of one-quarter of its weight. The greatest change consists in substituting three projecting copper rims to take the grooves in place of the lead sheathing. A new shrapnel, with an improved time-fuse, has also nbee introduc sinceed 1871.

A correspondent of the *Swiss Times* reports an important discovery within the past month, by Signor Ferrero, an amateur chemist, who, for many years, has made a special study of combustibles. He has succeeded in the invention of a substitute for coal, the quality of which renders it most serviceable for machines and locomotive consumption and the extraction of gas, the refuse being economized into a sort of coke for kitchen use. The process is extremely simple and makes use of a raw material extremely abundant in Italy, whose combustible, gaseous qualities were unknown or unapplied until this invention. The cost of this new fuel will not exceed two lire the hundredweight.

We are informed that a rail mill is being constructed in Louisville, Kentucky, at a cost of half a million dollars, for the manufacture of rails by a new system, which does away with manual labor. Before the iron comes out a perfect rail it is passed through 13 sets of rolls, without a halt, and is turned over five times for side rolling. The iron for a rail is taken from a heating furnace and transformed into the proper shape in 30 seconds.

The Pittsburgh *Commercial* states that measures are being taken for the construction of a railroad bridge across the Niagara River, at Lewiston, under the auspices of the Lake Ontario Shore Railroad, now in course of construction. The object is to bring the Ontario Shore Road into connection with the Canadian system, and ultimately to form a northern line from the seaboard to the great West.

The discovery is announced of another great lead mine in Wisconsin. Operations have not been carried further than to test the crevice, which already reveals a half million pounds of ore. About 200,000 pounds have been raised. The lead lies in chunks of such size that it has to be blasted to be handled. Miners say the prospects indicate this to be the largest body of that mineral ever struck in the State.

Messrs. Aleger & Co., of the South Boston Iron Company, are now casting at their foundry guns for the Argentine republic. The guns are to be of the heaviest calibre (15 inches), and it is estimated that when completed they will cost about seven thousand dollars apiece. It is said that a number of heavy guns for the same country are making at the Watertown Arsenal.

The Alexandria *Sentinel* reports a rumor to the effect that iron ore has been discovered in large quantities near North Garden, a station on the Orange and Alexandria Railroad, in Nelson county, Virginia. This will be a very important item for Washington and Alexandria if true.

In England a Mr. W. Dingley has lately patented the use of sulphate of soda in the crude state of salt cake, for the purification of iron. A small quantity of the salt is thrown on the surface of the molten iron during the operation of puddling—a dose of about 12 ounces being recommended for each heat of 4 or 4½ cwts. of metal.

Great excitment exists in Lyon county, Kentucky, over the recent discovery of valuable iron deposits in that county. The ore is brown hematite.

The manufacture of 7-pounder bronze guns, for mountain and boat service, has been discontinued in England, and steel 7-pounders are to replace them.

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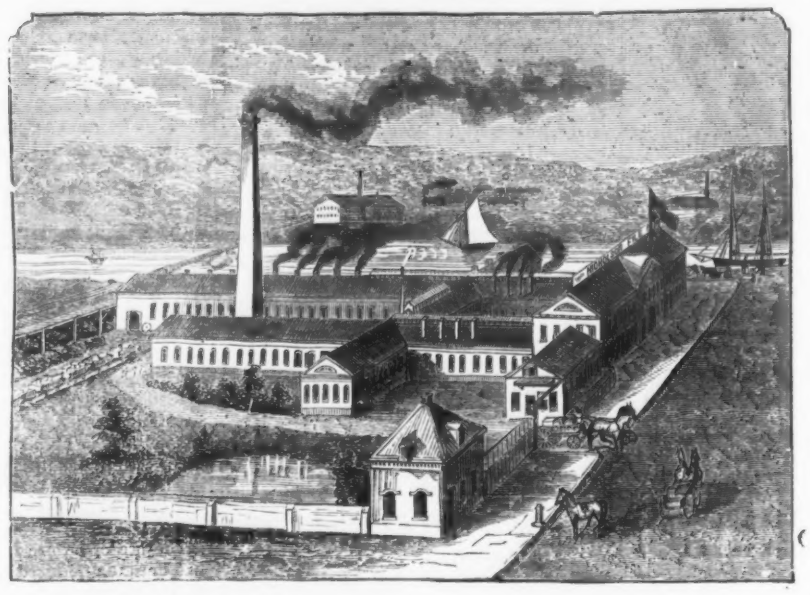
And all other kinds below 6 inches

IN BOXES OF ONE DOZEN EACH.



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THE NICHOLSON FILE.

All Nicholson Files are cut with the Patent *Increment Cut*, an invention owned and controled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformityof machine work. It is now upwards of six years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

Our prices are as low as it is possible to furnish a really first-class File *from the best of File Steel*, and may be had, with full terms and conditions, by addressing the

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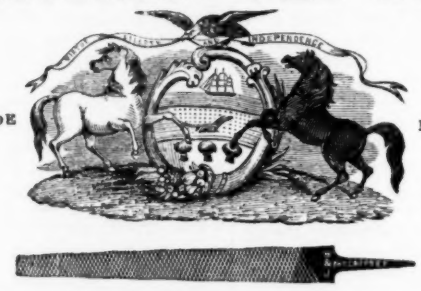

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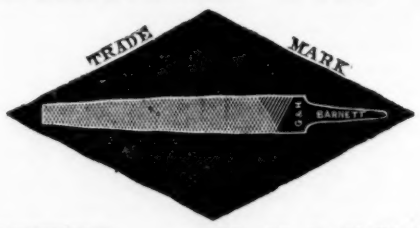

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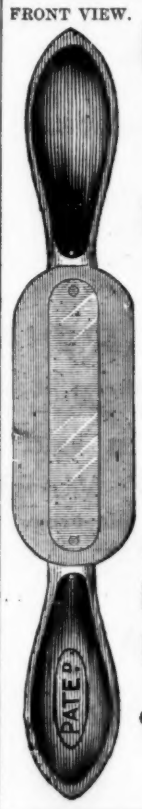
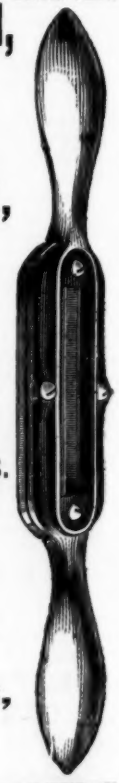


BACK VIEW



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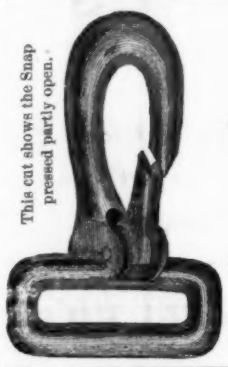

This cut shows the Snap pressed partly open.

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MANUFACTURERS OF

The Celebrated "Baldwin" Plane Iron,

HENSHAW'S PATENT HARNESS SNAPS

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Plow, Fillettster & Dado Stops of all kinds. Set Screws for Plows, Bench Plane Starts, &c. Patent Washer Cutters. Plane Iron Screws to order of any size.

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Something New for

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New Union Steam Safety Elevator,

How One Works.

RIVERSIDE IRON WORKS, DEWEY, VANCE & CO., Wheeling, W. Va., January 14th, 1873.

Messrs. OTIS BROTHERS & Co., New York.

Dear Sirs: The experience of a year proves that *your Furnace Elevator is superior to all others in use.* We have in the six weeks from December 1st to Sunday last, 12th inst., made *2724 tons, 1401 lbs. Pig Metal,* or an average of near *65 tons per day,* which required the elevator to *lift 72 feet high* 4½ tons Ore, Coke and Limestone for each ton of metal produced, or *more than 11,500 tons material in the 6 weeks.* The largest yield in *one* day was *81 1-4 tons* Iron, involving the lifting of *345 tons* material *in 24 hours.* This has all been done to *our satisfaction,* and that, too, in the *coldest weather we have had.* Other furnaces with *water* and *pneumatic hoists* have experienced *great difficulty,* on account of the *water freezing* in the *tanks;* and in the case of the *air* hoists, we understand that two furnaces, not far from us, *had* to *"blow out,"* from being *unable to hoist stock* during the *"cold snap."* The difficulty, we are told, was caused by the *condensed moisture* in the *blast freezing to the sides of the cylinders,* so that the *piston could not move* up or down.

Very truly, yours, DEWEY, VANCE & Co.

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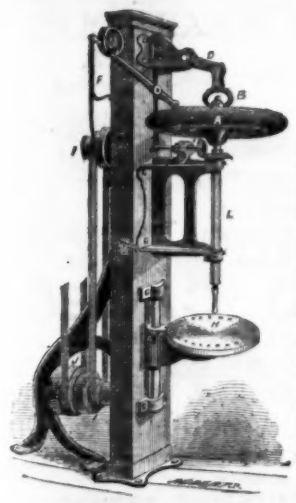

We call the attention of **Carriage Makers, Machinists, Iron Railing Manufacturers, Blacksmiths,** and all others interested in **Drilling, Punching or Cutting Iron,** to our

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feeling assured that upon examination their merits must be apparent to every one, from the fact that they possess the essential characteristics of strength, power and cheapness, in a high degree.

Illustrated Catalogues and Price Lists furnished on application.

We are also prepared to furnish light work of any description and in any quantity to order.

All kinds of Die Forgings promptly attended to.

OFFICE & WAREROOMS, 78 Chambers Street, New York.

BUSINESS ITEMS.

PENNSYLVANIA.

The Vulcan Iron Works, Wilkesbarre, were established in 1846, by Richard Jones, Esq. In 1866 a stock company was formed, with $200,000 capital, and Mr. Jones elected President. The company manufacture and repair machinery used in coal mines and breakers. They are now manufacturing stationary engine No. 152, and have turned out since 1866 100 horizontal and vertical engines, now in use by collieries in the Wyoming Valley. There are now employed in these works 100 hands. The grounds have been laid out, and the foundation stones are ready for the building of a new and additional foundry, 80 by 160 feet, boiler shop 65 by 135 feet, and blacksmith-shop, and when finished will give employment to 100 more workmen.

The rolling mill at Parkersburg is rapidly approaching completion. The furnaces are finished, the engines and boilers are in position, and the rolls, with an immense amount of machinery, have arrived.

Mr. Samuel McHose, of Allentown, has been awarded the contract for building the furnace of the Pequest Mining and Manufacturing Company, near Belvidere, New Jersey. The Pequest is a blast furnace company.

The Coleraine Iron Works, at Redington, are to add two new furnaces to the two already in operation.

The Lebanon Car Works are being rapidly reconstructed. They will be in operation in a short time.

The new foundry and machine shop of Cruikshank, Moyer & Co., at Danville, recently went into operation.

The Andover Iron Company, Easton, with a capital of nearly a million of dollars, runs three stacks, with from 32,000 to 35,000 tons of pig iron every year. It employs 400 men, and pays for labor about $35,000 per month.

MASSACHUSETTS.

Messrs. Wright & Emerson, proprietors of the Agawam Foundry, Springfield, are doing a business of $50,000 a year in the manufacture of pumps, cylinders, &c., for engines, columns for buildings and ornamental iron fences, which are a specialty with them.

The Union Machine Company, Fitchburg, began in 1867 with a capital of $65,000, and they have now some 75 hands, their specialty being the manufacture of paper machinery, steam fire engines, etc. Francis Sheldon is president of the company, Col. Crocker and Gardner S. Burbank being among the heaviest owners in the concern. S. S. Dow is superintendent of the works. The annual sales are about $150,000.

MARYLAND.

There is a blast furnace in Catoctin, built in 1774, and rebuilt in 1787. This is said to be the oldest blast furnace in the State. In 1717 pig iron was exported from that State to England, the mother country not allowing, at that date, any kind of iron except pig to be made in the colonies; but in 1737 bar iron was permitted to be manufactured, the act providing, however, that there should be no rolling mills built, nor slitting mills, or forges for making plates, as that would interfere with the manufactures of Great Britain.

SOUTH CAROLINA.

The only tin works in the South are those of H. A. Duc & Sons, Charleston, who are devoting considerable enterprise in the manufacture of tin ware for the wholesale trade of the South. They have met with abundant success, far beyond their most sanguine expectations, and are wisely determined to profit by the experience of those most successful at the North. They have spent considerable time in ascertaining the most modern appliances for the economical production of the wares they manufacture, and have given their contract to Marchand & Morgan, of Alliance, Ohio, for steam hammers and machinery for the manufacture of tin and copper ware.

VIRGINIA.

The Virginia Manufacturing and Transportation Company has asked the Virginia legislature for authority to build a railroad from Winchester southeast to some point on the Potomac between Alexandria and Acquia Creek. The road is to be chiefly for the transportation of iron ore and other minerals.

WEST VIRGINIA.

A rumor is current that a company composed of Vermont gentlemen have bought the blast furnace at Muddy Creek, and are now putting the machinery, etc., in order, with the intention of enlarging the capacity to manufacture pig metal.

COLORADO.

At Swansea, a new town two and a half miles from Denver, a company has been formed to erect iron works. The ore will be obtained from the Canon city banks, 155 miles north of Denver, and the Canon and Erie coal will be the fuel used.

UTAH.

A company is organizing in London for the purchase and working of the Tecoma mining property in Box Elder county. The capital of the company is to be $1,500,000, and the purchase money of the property is to be finished at $650,000 in cash, and $750,000 in fully paid up shares.

OHIO.

A Wheeling company is about to commence the erection of a large nail mill at Salem, at a cost of $100,000, employing 75 men.

MISSOURI.

The Quealey Iron Works, of Hannibal, employing 350 men, are to be removed to Parsons, Kansas, for the use of the Missouri, Kansas and Texas road.

The new iron bridge at Grenada, on the Mississippi and Tennessee Railroad, is now completed. It is composed of four spans, aggregating 620 ft. in length. The main bases or bottom pieces are cast iron, while all the other pieces are wrought iron. The main supports or braces, with the chief girders, are wrought iron tubes, made amply strong and secure. The bridge was built by the Louisville Iron Bridge Co., and will cost $40,000 when fully completed. It is the intention of the company to cover the entire piers with a concrete composed chiefly of the red oxide of iron, making them almost as durable as iron itself.

ILLINOIS.

The shops of the Chicago and Northwestern Railway Company are be removed to a site just beyond the city limits, in the town of Cicero. The new shops will be concentrated and enlarged. A new machine shop, 120x552 feet, having attached to it a boiler shop, 140x300 feet, and a blacksmith shop, 80x300 feet, is to be constructed, the plans for which are now nearly prepared. They will also erect two round houses, with stalls for 40 engines each. Men are already engaged in quarrying material for the foundation, and the erection of the buildings will be commenced early this spring. They are also contemplating the construction of numerous car shops, an engine room, paint shop, foundry and store room, the whole to give constant employment to about 3000 men.

The Stevens Battery.

New Jersey, says a writer in the *Naval Gazette*, has an elephant. We allude to the famous Stevens' Battery. When Edwin Stevens died, the monster battery was in a skeleton shape, but he left one million dollars to complete it. According to his will, the ship was bequeathed to the State of New Jersey, as a gift, so soon as it could be completed by his executors, at an expense, to his, Stevens', estate of not more than one million of dollars. Work was energetically pushed, and the vessel was to be finished in three years. The legislature of New Jersey accepted the gift by an appropriate act, and authorized the governor to appoint three commissioners on the part of the State to keep an eye on the war vessel of New Jersey. In a following year the legislature discussed what should be done with the money coming from the proposed sale of the battery, and while certain persons favored its being placed in the school fund, Governor Randolph would have liked to have had the sum credited to the general fund of the State, so that on his retiring from the gubernatorial chair the State might be said to be largely ahead in its financial possessions, the amount to be received being variously estimated at from $2,000,000 to $4,000,000. Congress also was petitioned, and did validate the prospective passing over of the vessel to New Jersey's possession, but said that she must dispose of it by sale, and, therefore, not keep the monster, in defiance of the Constitution.

Everything was working very smoothly, and New Jersey almost felt the money rattling in her State Treasury. So certain was she that a contract was made between the State Commissioners and a large New York firm, whereby the latter were to have the vessel at the price of $1,500,000, provided that firm could dispose of it, as they expected, to the government of Turkey. This contract was ratified by the governor of New Jersey and her Chief Justice, but, alas, it is but a conditional contract, and though renewed for a second term, the New York house did not make their sale to Turkey nor their handsome commission.

But after the work on the battery had been pushed energetically for some time, it was discovered that the estimates were far under what the real amount needed would be to finish the vessel. Other estimates were made, and it was learned that $800,000 had been expended already, and that fully $600,000 more would be needed. This would bring the cost some $400,000 beyond the $1,000,000 to be spent, and here troubles at once broke out. By the will, not only must the amount to be expended not exceed $1,000,000, but also the vessel could not be passed over to the State until she was fully completed. The widow of Mr. Stevens and her children then threw the whole matter into the Court of Chancery, where it has remained ever since, and now is awaiting a decision. The bill in Chancery claims that as they cannot use more than the million, nor give up the vessel till she is completed, the will of Mr. Stevens in regard to this vessel must be deemed inoperative and void, and they ask the court to decide upon the future disposition of the partly finished vessel. The State authorities probably feel disposed themselves to furnish the needed $400,000, finish the vessel, sell it and repay the State her advance, and hand her over the balance. But this was not the will of Mr. Stevens. And so the Chancellor is called upon to decide as to what disposition can or may be made of the vessel, either now or when, if ever, completed, and till he does this, New Jersey has only her navy *in esse* and not *in posse*.

Steel Manufacture.

Mr. W. Mattieu Williams, in a communication published in a recent number of *Iron*, says of the process of steel manufacture lately invented by M. M. Bajault and Roche. It is the old, worn-out, and continually repeated notion of making steel by melting pig-iron with hematite or other rich ore, composed chiefly of iron oxide. If steel were, as some of our writers of scientific treatises still persist in describing it, "only cast iron minus some carbon," of course it might be made in this manner. If cast iron were composed of nothing else but iron and carbon, this would be a sound and practical method of making steel, and there would be no necessity for the complications of cementation, shearing, tilting, pot-melting, &c., which give to Sheffield its chief celebrity, as steel of all degrees of hardness or mildness could be made in the puddling furnace more easily than malleable iron, and would be proportionally cheaper.

Provided with a supply of such cast iron, differing only from steel by its excess of carbon, the puddler need only fettle his furnace with an abundance of red ore, melt these imaginary pigs, work a light and graceful rabble in an easy, elegant style, and tap the contents of his furnace into cinder-bogies or ingot-molds, without the labor of balling and shingling. Or, easier still, a refinery furnace would perform the whole operation of conversion without the aid of any puddler whatever. The mere decarburization of iron is one of the easiest problems in metallurgy, so easy as to be inevitable, for it occurs whenever a piece of cast iron or steel is made red hot in contact with the atmosphere.

These French philosophers effect the decarburization of the pig iron by keeping it fused for some time in a reverberatory furnace, in contact with the rich ore. This is done every day in the manufacture of puddled steel, which is made by thus melting specially selected pig-iron with hematite ore, and rendering the process successful (which could not be the case otherwise) by skillful working, skillful balling, and skillful manipulation of the furnace doors and dampers. With all these superadded advantages, an inferior quality of mild steel, of very irregular composition, is produced; and there can be no doubt that Messrs. Bajault and Roche have succeeded, as they have done again and again, in "the decarburization of pig iron," by simply melting with oxide of iron, inasmuch as the carbon of the pig would reduce the iron of the ore, and the oxygen of the ore would oxidize the carbon of the pig. But what would be the result? Simply, refined pig iron, *i. e.*, a pig iron containing less silicon, less carbon, and a little less or more of sulphur and phosphorus (according to the quality of the ore) than the original sample.

The statement that they obtained a steel containing no sulphur and no phosphorus can only be explained by their having used a pig iron that likewise contained neither of these, or by an error in analysis.

Had MM. Bajault and Roche known that their idea had occurred over and over again to others, and had been tried and patented repeatedly, at great cost and vexation, a considerable waste of scientific energy would have been prevented. So long as our chemical text books continue to repeat the fallacy that steel is merely a decarbureted pig iron, that and other processes for the oxidization of the carbon of pig iron will continue to be re-invented, to the great vexation and cost of many ingenious men.

The Hartford Steam Boiler Inspection and Insurance Company make the following report of its inspections in the months of December and January, 1873.

During the months of December and January there were 2101 visits of inspection made, and 4111 boilers examined, 1576 of these were carefully examined internally, and 322 were tested by hydraulic pressure. The number of defects in all discovered were 2272, of which 515 were regarded as dangerous. These defects were as follows: Furnaces out of shape, 128—37 dangerous. Fractures, 233—120 dangerous. Blistered Plates, 335—50 dangerous. Accumulation of Deposit, 492—43 dangerous. Incrustation and Scale, 470—38 dangerous. External Corrosion, 128—12 dangerous. Internal Corrosion, 52—10 dangerous. Internal Grooving, 53—4 dangerous. Water Gauges defective, 87—17 dangerous. Blow-out defective, 61—13 dangerous. Safety Valves overloaded, and out of order, 67—20 dangerous. Pressure Gauges defective, 213—30 dangerous. Boilers without Gauges, 55—9 dangerous. Deficiency of Water, 16—12 dangerous. Broken Braces and Stays, 75—36 dangerous. Boilers Condemned, 31.

The defects enumerated above are such as are usually found in these reports. Boilers that are not carefully watched are liable to rapid deterioration. It must be remembered that boilers are under heavy pressures—that there is an internal force contending continually with the surrounding iron for the mastery. Irregularities and disturbances favor the internal force, and weaken the surrounding resistance. Hence it becomes of the utmost importance that the safe-guards of the boiler be kept as near as possible in perfect condition.

The neglect to do this is often followed by serious consequences. A case has recently come under our notice where an engineer (?) was running a boiler with the gauge cocks entirely stopped, by incrustation and corrosion. The water gauge connections were filled up so as to render it worthless, and the safety valve was in a very dangerous condition. In another case the safety valve was so near the timbers of the floor overhead that it could not lift. Numerous cases of broken and loose braces and stays have been found. In one case, when the boiler was working under a very heavy pressure, the front head was cracked (the stays being broken), and at every revolution of the engine it vibrated to the varying pressure. Blisters have been numerous, though in comparatively few cases dangerous, but some have been very bad indeed, and the thin leaf that resisted the internal pressure was saved only from its small area. Pressure gauges have been found in very unsafe condition, their variations being from —57 to +13. The great variations have been found principally in iron works. The worst cases were as follows: —10 —15, —30, —35, —57. These, it will be seen, are all *heavy*. Hence, the steam users were running a pressure in excess of that indicated by their gauges corresponding to a pressure indicated by the addition of the above errors. Thus, we will suppose that a steam gauge indicating 80 lbs., upon being tested, is found to be —57 lbs., or 57 lbs. *heavy*. It will be seen that the actual pressure would be 137 pounds, which doubtless would be beyond the limit of safety.

The comparatively numerous explosions of steam boilers in iron works and rolling mills the past year would seem to indicate that there was a great want of proper attention to the condition of boilers on the part of both proprietors and engineers.

We were recently called upon to test and correct a steam gauge which was used on a boiler exposing many lives. The gauge, upon examination, was pronounced worthless, and condemned. Its variation at 20 lbs., 15 lbs. *heavy*, and the error increased as the pressure was increased. Upon investigation, it was ascertained that the boiler was in a very dangerous condition. It had been condemned by an inspector nearly a year previous, and yet had been kept at work at an indicated pressure of 60 lbs. —or an actual pressure of between 80 and 90 pounds. We regard this as a case of criminal carelessness

Keystone Saw, Tool, Steel & File W'ks,

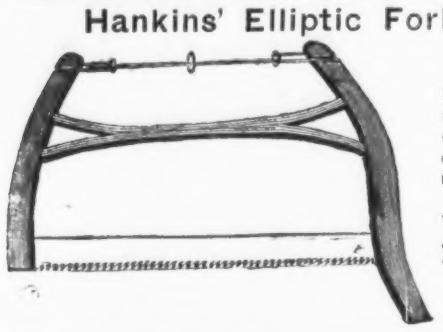
Front & Laurel Sts., PHILADELPHIA, PA.

HENRY DISSTON & SONS,

having rebuilt that portion of their extensive Works destroyed by the conflagration of Nov. 15, 1872, and having introduced new and improved Machinery for the Manufacture of every Article of the Trade, are prepared, with their increased facilities, to fill all orders with punctuality, promptness and dispatch.

Hankins' Elliptic Forked Saw Frame.

Patented June 28th, 1870.



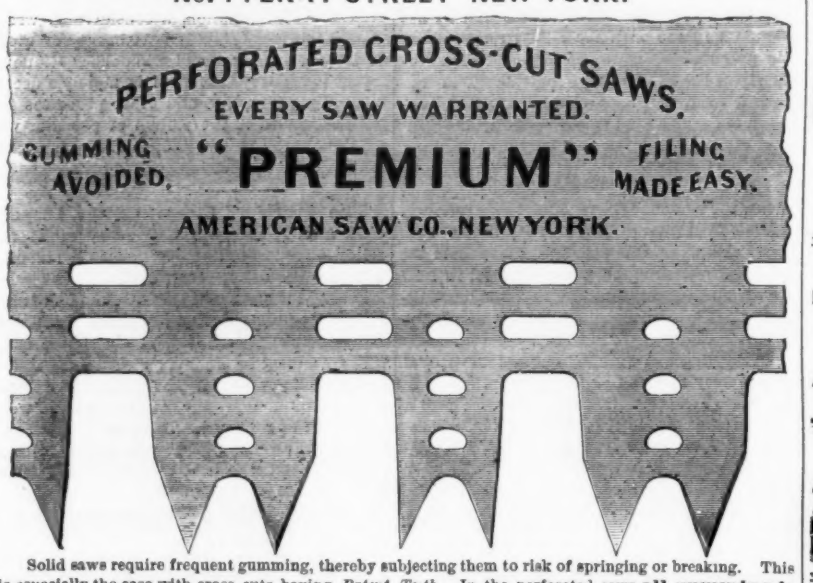
The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability.

These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

No. 1 FERRY STREET NEW YORK.



Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avoided,** and the teeth are easily kept long and in *proper shape*, saving *files, labor, expense* and *vexation*. As is well known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

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Manufacturers of

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Genuine Improved
PATENT
SCREW
WRENCHES,

Worcester, Mass.

We have manufactured this style of wrench for the past two years. Our Mr. L. Coes, formerly senior member of the firm of L. & A. G. Coes, established in 1839, is the Original Inventor of the Screw Wrench, and has, by making the bar *wider*, where the strain comes most severe, and screwing a nut up firmly against four *square* shoulders inside the ferrule, thereby *effectually* preventing the ferrule from being thrust back into the handle or getting loose, and making a larger screw than in the old wrench, fully succeeded in making a 12 inch wrench stronger than a 15 inch made in the usual manner. All sizes are made in this way, and are undoubtedly the strongest and best finished Screw Wrenches in the market.

There are *Imitations* of our goods offered for sale, that, without question, infringe on our Patents.

We hold Patents bearing date Nov. 10th, 1863 (re-issued June 1st, 1869), June 26th 1866, March 23d, 1869 (re-issued April 12th, 1870, and May 14th, 1872), which fully cover all our improvements. One of the above cuts represents a sectional view, showing the nut under the ferrule, and the strengthened bar, that part being covered by the jaw, as seen in the cut of wrench complete. None genuine unless stamped

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POLISHED & DETACHABLE BUCKETS
CHEAPEST & BEST WHEEL MADE.
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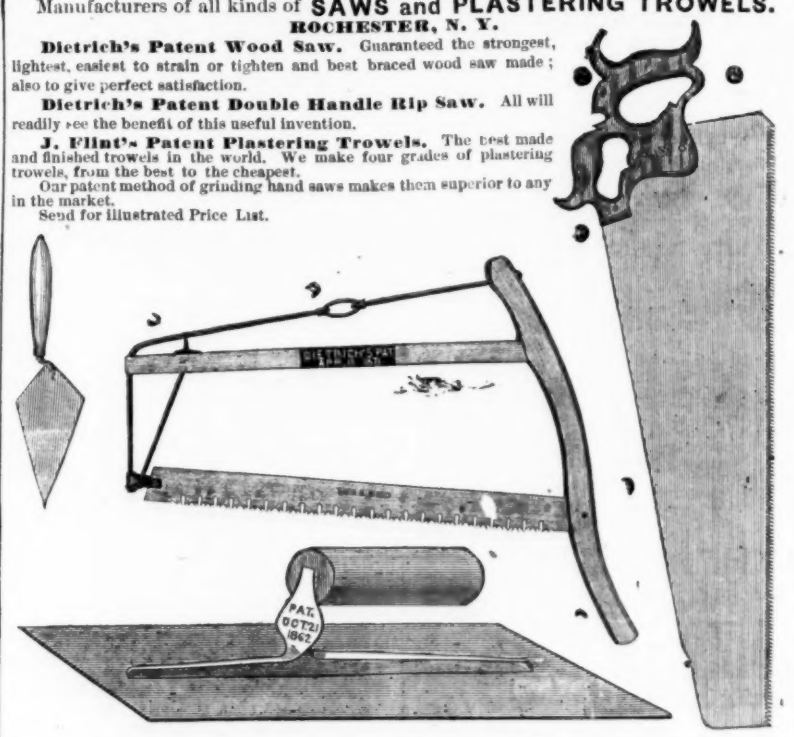

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Where the Hardware Trade do not sell the Lightning Saw, I will send a 6-foot cross-cut and a buck saw-blade on receipt of $6.

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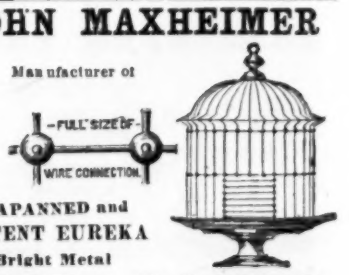

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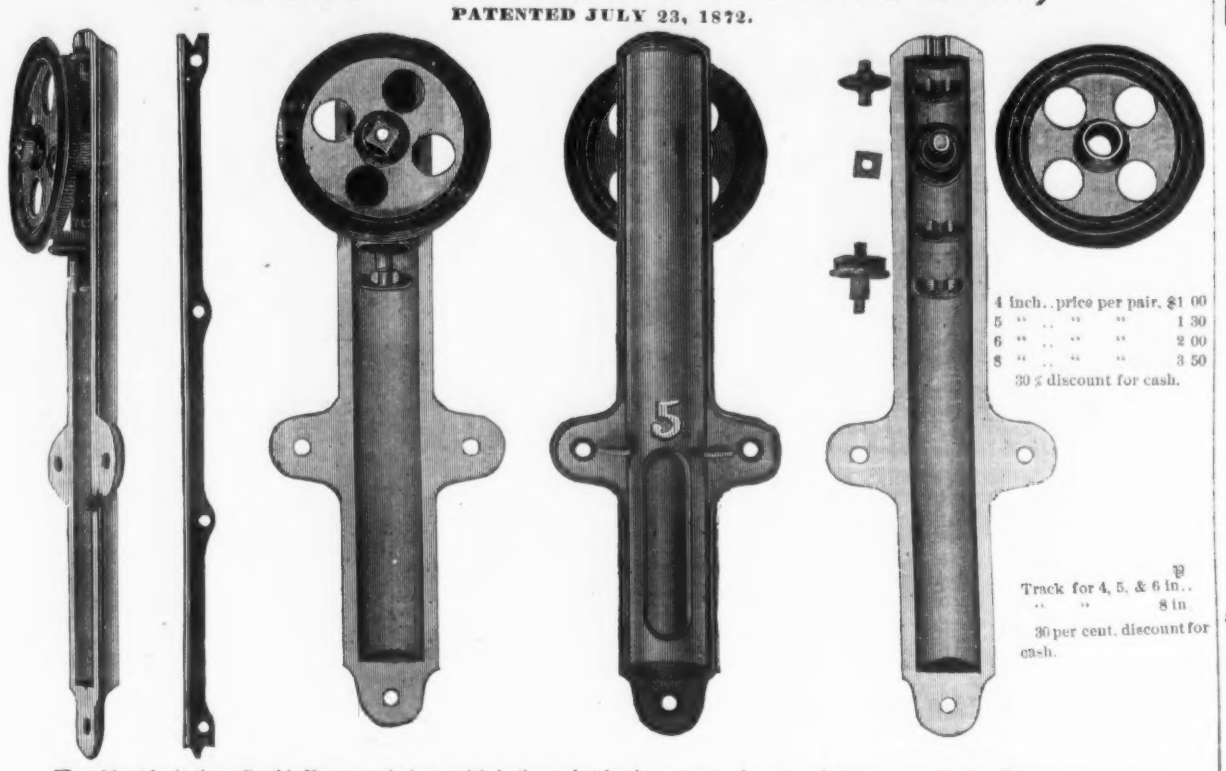

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Track for 4, 5, & 6 in..
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5th.—**IT CAN NEVER RUN OFF THE TRACK.**
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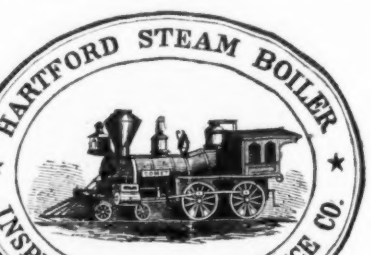

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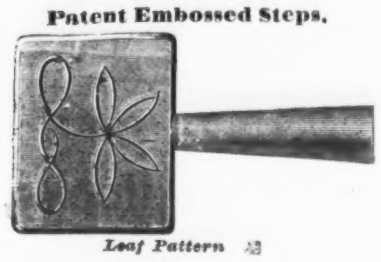


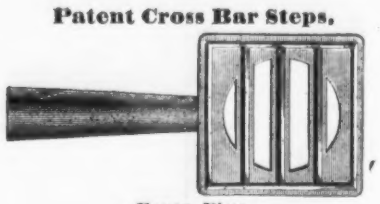
Leaf Pattern

King Bolt Yokes.

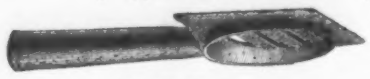
No. 6 Fifth Wheels.

1871 Pattern Shaft Couplings.

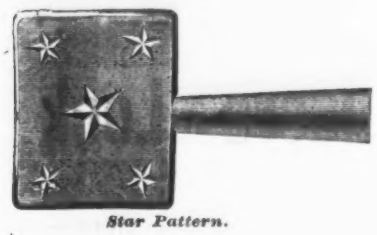
Patent Cross Bar Steps.



Upper View.

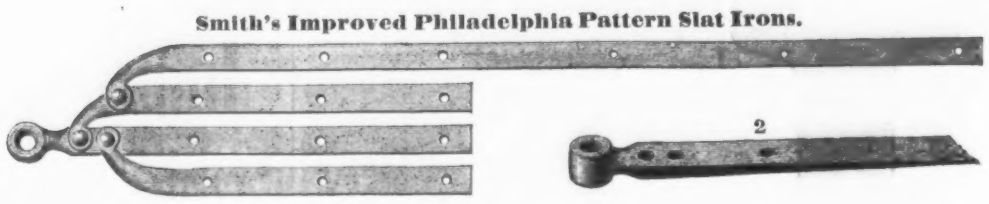


Lower View.



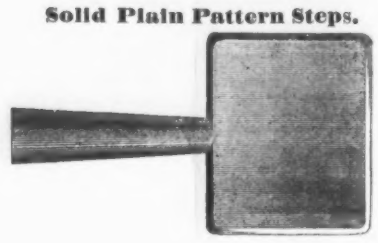
Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.



2

Solid Plain Pattern Steps.



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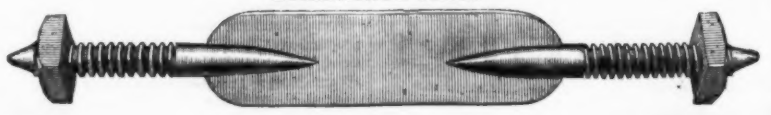

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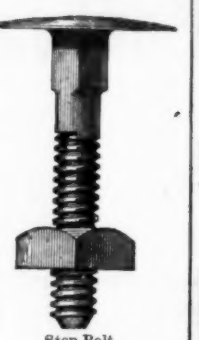

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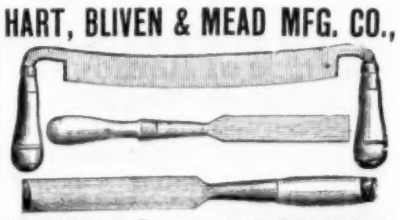

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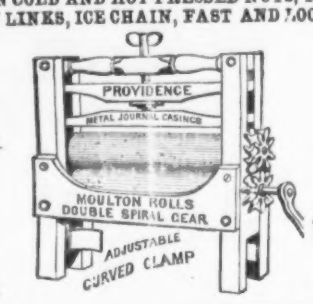

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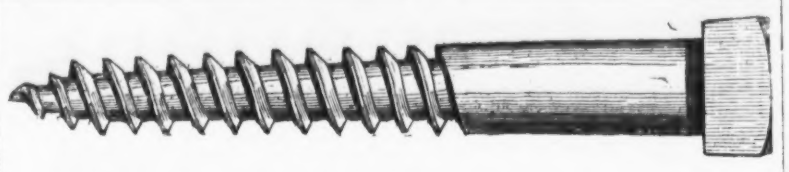

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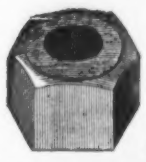

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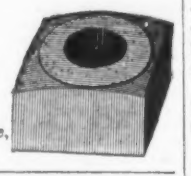

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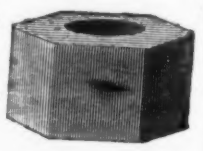

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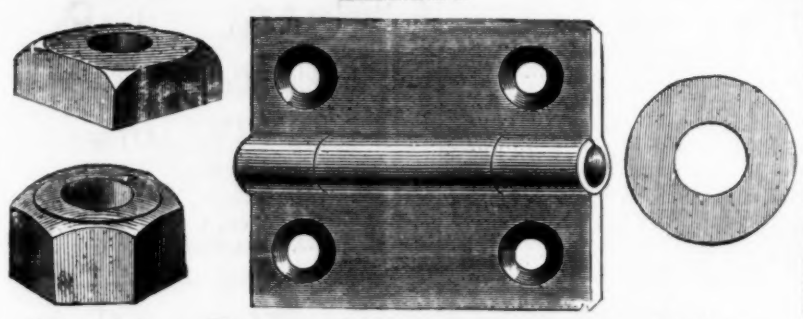

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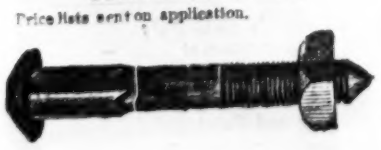

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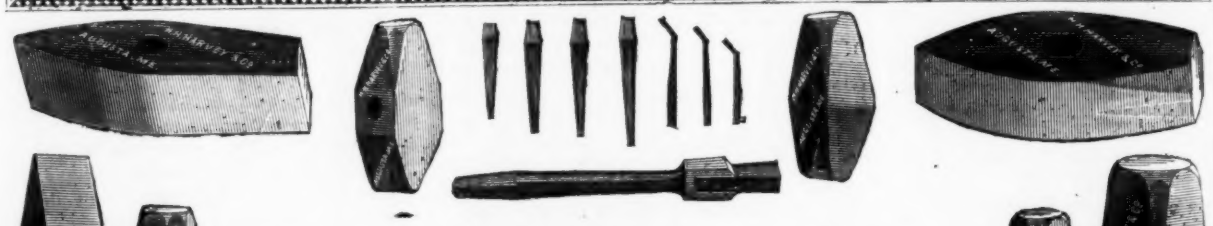

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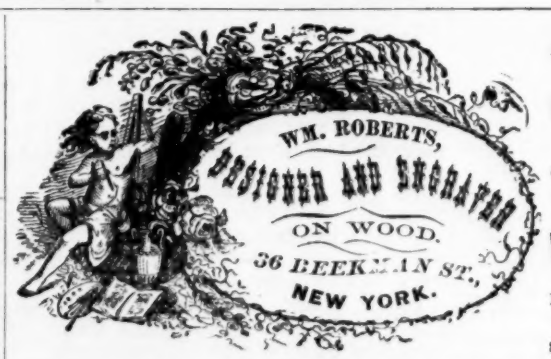

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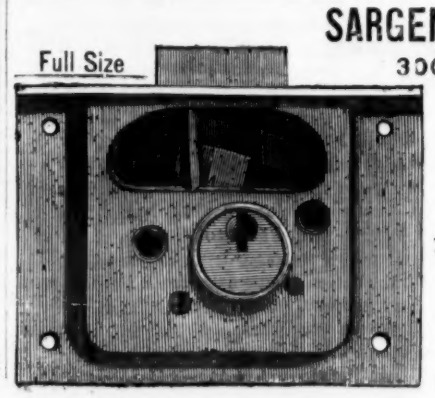

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15 "	$20 00; with Fly Wheel	25 00	3 "	4 50	
25 "	25 00 "	30 00	4 "	5 50	
			6 quarts		$ 7 00
			8 "		9 00
			15 "		15 00

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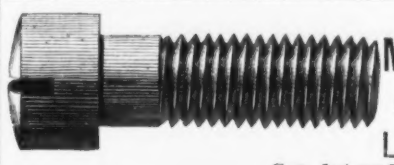

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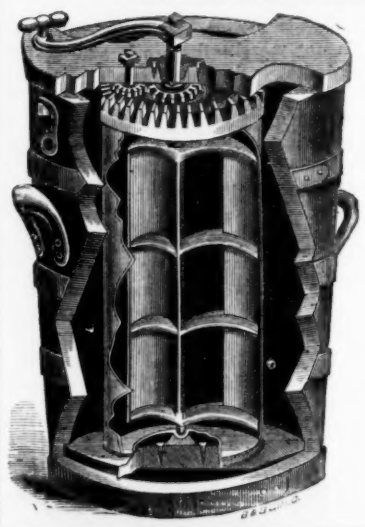

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The Iron Age.

New York, Thursday, April 3, 1873.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . . Editor.
JOHN S. KING . . . Business Manager.

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REMOVAL.

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Has been removed to

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England's Position as a Manufacturing Country Considered.

There is much in the present condition of affairs in England, especially as regards her great manufacturing industries, to mislead those whose opinions as to the future of that country are formed from impressions derived from passing events. During the past few years the British nation has experienced changes which, if not unparalleled in the world's history, are certainly the most remarkable through which any nation has passed within the memory of the present generation of men. Less than five years ago England was in the enjoyment of a prosperity, industrial and commercial, greater than she had ever before experienced, and greater, all things considered, than any other nation had ever attained. Her productive capacity was taxed to its utmost to supply the demands of home and foreign markets; her monopoly of the world's trade for many of the most important of her manufactures was so nearly absolute as to seem to place her almost beyond the possibility of competition; coal was both cheap and plentiful, and labor, if not content to receive so small a share of the profits of production as capital had allotted it, was tractable, skillful, and in abundant supply. Within this brief period the conditions have wholly changed. Coal, the cornerstone of the nation's prosperity, is scarce and dear, labor is in organized and open rebellion, prices of all useful commodities have advanced with startling rapidity, industry is paralyzed, foreign orders go begging in the markets, finding only conditional acceptance, at best, and England is in a position to-day which, three years ago, would have seemed to the people of that country the very verge of national ruin. It is not to be wondered at, therefore, that the true meaning and significance of these great changes should be so generally misunderstood on both sides of the Atlantic. The conservative Englishman, satisfied with himself and his surroundings, and believing that nothing can shake the foundations of British prosperity, growls about present discomforts and high prices, but has no fear of the future. Assured by parliamentary blue-books that the supply of coal remaining in British soil is ample for the nation's requirements for another century or two, and by newspaper writers that labor is powerless to control the operations of capital, or to more than temporarily disturb the harmony of action, if not of sentiment, hitherto existing between masters and men, he sees in present evils no menace of greater evils to come. To the average American the picture presents a different side. The startling changes which have taken place so suddenly in Great Britain seem to have permanently crippled her productive industries, and we are inclined to believe that the bubble of a prosperity based upon cheap labor has burst, and that, as a manufacturing nation, England is on the brink of ruin.

While we are not prepared to agree with either of these views of the English situation, there is reason to believe that, of the two, the one last given is nearest the truth. Though not in danger of immediately falling from the high position which, as a producer for non-producing countries, she has occupied for so many years among the great nations, the difficulties and embarassments which have overtaken her manufacturing industries are neither transcient nor temporary. Even the most conservative of British journals bear unwilling testimony to the fact that the decline of England's material greatness has already begun, for while there is, as yet, no great falling off in the aggregate of her exports, her progress, as measured by the percentage of her annual increase of production, is relatively less than that of other nations formerly doubly dependent upon her, as furnishing at once a market in which to sell their product of raw materials and in which to buy manufactured commodities. Many causes have combined to make England the "workshop of the world," but the greatest have been cheap coal and cheap labor. Of these she has neither at the present time, and upon neither can she depend in the future. As to coal, those best informed and most deeply interested believe that, while a reaction from the present extreme prices is inevitable, since a sharp check has already been placed upon consumption, fuel will never again be as cheap or abundant as it was two or three years ago, nor, relatively, as cheap as the fuels of other countries. As to labor, it is unusually admitted that British employers can never again expect to have much, if any, advantage over employers of other countries in the matter of wages. This change is not merely the work of trade unions and the result of strikes; it is the effect in part, in part the cause, of other changes which are in their nature permanent. But a consideration of still greater importance is found in the fact that English products are now beginning to encounter a foreign competition which must become more active each year, while each year will find her less able to meet that competition. Other nations are now surpassing her in the excellence of their products, and in some branches of manufacture the greatest difficulty is experienced in retaining for English goods any considerable part of the home market in competition with the cheaper and better manufactures of other countries. Indeed, England is rapidly losing her prominence in everything which made her great and influential among nations. She no longer "rules the seas," nor controls the world's carrying trade; as a military power she ranks third, if not fourth, and must henceforth shape her foreign policy with a view to the avoidance of misunderstanding with powerful and not over considerate neighbors; as a naval power her strength lies in iron clads which are still an experiment, and from which other nations are learning wisdom without paying for it; as a political power her influence is merely nominal in Continental Europe, and far less strong in Asia than is commonly supposed. Why is this? Not because England is falling behind, but because other nations have, during the past few years, made a progress so much more rapid than her own. The same is true of her position as a manufacturing power. Other nations, formerly seeking wealth and power only through conquest, and caring little for the development of resources other than those which contributed to their military strength, have learned the value of promoting the arts of peace, and are now making commercial conquests more enduring than those achieved with the sword. America, Belgium and Austria are becoming her rivals in the manufacture of iron, Germany in the manufacture of hardware, and Alsace produces printed cotton goods so far superior to anything made in Great Britain, that even the changes resulting from the late Franco-German war have not given English manufacturers an opportunity for successfully competing with them. Indeed, there are but few articles of British production that are not fully equalled by the productions of other countries, in which the lack of especial natural advantages is more than offset by superior enterprise. There is, therefore, but one condition upon which it will be possible for England to retain for any length of time the export trade in manufactures which, more than anything else, has contributed to her present wealth and prosperity, and that is her ability to produce *more cheaply* than her rivals. Ten years ago she was in a position to comply with this condition, and make goods for foreign markets so much cheaper than they could be made in the countries to which they were sent, that, without the judicious protection of its home industries, no other country could have competed with her. But this is no longer possible. In other countries the tendency will be toward cheaper production—in England the tendency must be steadily in the other direction. Her coal supply is not only definitely limited, but every ton taken out renders it necessary to go deeper for the next ton, and neither patriotic nor philanthropic motives will impel the coal owners to continue furnishing consumers cheap fuel until they have no more to furnish. Importations of coal from other countries will, of course, sooner or later, fix a limit to the price of British coal in the home market, but no one whose opinion is worth anything believes that consumers will ever again have coal as cheap and abundant in the future as in the past. The same is true of labor. The time is past when British workmen were content to receive wages which barely provided their families with necessary comforts while they could work, but which left them paupers at last. It is useless to tell the trade unions that they are destroying the foreign trade of England, crowding her manufacturers into bankruptcy and forcing capital to seek investments from which the working classes can derive no benefit. They either do not believe it or do not care if it is true; and while labor will suffer most heavily in the long run from the results of the bitter struggle now in progress, capital is seeking its own temporary protection in concessions which render cheap production impossible. In other countries the working classes are becoming skilled in manufacturing the raw materials upon which British manufacturers depend, and the latter must already observe the closest and most systematic economy to compete with manufacturers of countries producing the raw materials. It has already been stated on good authority that the time is not far distant when the cotton spinning and weaving machinery, and the skilled labor of her white goods factories, must go to the cotton which can no longer be profitably brought to them and carried back again to consumers, and one of the leading English trade journals has ventured the prophesy that the iron masters of that country will have to take their movable machinery and skilled labor to the ores and coals which they no longer find in British soil. From all this it is, perhaps, natural to conclude that, like the "one-hoss shay," England's industries are going to pieces all at once, but this would be too hasty a conclusion. That a decline in her production and trade is inevitable—indeed, has already begun—we admit, but for many years to come English capital, English skill and English prestige will maintain England in a prominent position, and the loss of her foreign trade will result rather from the progress of other countries in the development of their productive resources than from her inability to maintain her industries upon foreign materials. Political disturbances, foreign wars, the emigration of labor to America, and other causes, may operate to hasten the downfall of this now great and powerful nation, but these contingencies cannot be taken into account in forecasting the future. For the present it is enough to know that Great Britain has reached the limit of her greatness, and that we know the strength of our only competitor for the world's iron trade.

Paper as a Material of Construction.

Whether or not we are about to enter upon what will be known to the historians of the future as The Paper Age, has lately become an interesting topic of discussion. Probably not, for we fail to discover any opportunity for progress that shall efface from history the impress of the Iron Age, for we are only now beginning to discover the utility of that metal, and each year must make it more and more the indispensable element of a vigorous material civilization characterized by great undertakings and great achievements; but we nevertheless believe that there is a future for paper as a material of construction, in which it is to become the general, if not universal, substitute, for wood, leather, india rubber, and, to some extent, copper, tin, and zinc. During the past few years a great deal of attention has been given to this subject, and the results already attained, though comparatively unimportant in themselves, show the possibilities of this material and its more or less perfect adaptation to a thousand uses to which no one has yet thought of applying it. In proportion to weight it is, probably, the strongest material known, and combines more perfectly than any other substance the qualities of strength, lightness, flexibility, durability, and cheapness. So many and various are the materials of which it can be made, that it can be manufactured in quantities practically unlimited in every civilized country of the world, and so long as plants grow paper manufacture can be sustained. It is, under all circumstances, an easy material to work and handle; in short, it possesses every requisite quality, and, like many another material now indispensable, its utility is discovered just as we are beginning to feel the need of something cheaper and more abundant than wood, leather and hard rubber to substitute for them.

To mention the articles now made of paper which, until lately, were made wholly of other and more costly materials, would require more space than we can give even so interesting a subject; but some idea of the diversity of uses to which it may be applied may be gained from the fact that, at the recent fair of the Franklin Institute, the display of articles made wholly, or in great part, of paper, comprised oil cloth, patent leather and leather suitable for insoles, gas pipes, whip handles, saw handles, knives and forks, combs, buttons, washers, roofing, and car wheels. Even iron is not adapted to uses so widely various, and certainly no other material has yet been found which, at the same cost, could be made to answer so many purposes. These, it must be remembered, are but the first fruits of American inventive talent as yet scarcely stimulated in this direction; and what may we not expect when, with a growing demand for manufactures of paper, there shall be more inducement than now offers for investigation and experiment? If we can make car wheels of paper, why not cars as well? If roofing, why not houses, or, at least, such portions of them as are now made of wood? We learn that paper pulp, brought to a state of great toughness and solidity by pressure, is already used in place of wood in the manufacture of window shutters, which are said to be as fire-proof as metal, and even more durable; and there seems to be no good reason why paper doors, window casings, balusters, stairs, mantles, and even furniture, should not be counted among the possibilities of the immediate future. Paper boats are no longer a novelty; why should we not have paper carriages in which to take our daily airings in the park? Paper collars, cuffs and bosoms have become indispensable; why should we hesitate to believe, with our present experience of the facility with which it can be substituted for linen and muslin, that paper hats, paper boots, and even paper outer garments, will be fashionable a few years hence? Indeed, were we to give play to our imagination, it would not be difficult to adapt paper so perfectly to the varied requirements of the human family that "the coming man" would have little use for anything else from the time he lay in his paper cradle until he was gathered to his fathers in a paper casket. Possibly the champions of paper claim too much for it; but we may allow them a wide margin for disappointment and still see in it that which shall supplement iron most effectively as a material of construction, and rank second to it alone for utility, cheapness and durability.

Encouragement to Iron and Steel Manufacture in Pennsylvania.

On the 21st instant Governor Hartranft, of Pennsylvania, signed and made a law the Act of Legislature authorizing the incorporation of companies for the manufacture of iron and steel in that State. It provides that any three or more persons may form a company for the manufacture of iron and steel in any form, when not less than twenty thousand dollars, nor more than one million, shall have been subscribed as capital and 10 per cent. paid in. The certificate of organization, setting forth the facts and presenting proof that the conditions of the law have been complied with, shall be filed in the office of the Secretary of State, and the Governor is required to issue letters patent under the seal of the commonwealth declaring the incorporators a company and authorizing the sale and transfer of stock. Section 6th provides that every such company shall have the right to purchase, lease, hold, mortgage and sell real estate and mineral rights, to prove and open mines, to mine and prepare for market, or for their own use and consumption, iron ore and other minerals, and to erect and construct furnaces, forges, mills, foundries, manufactories and such other improvements and erections as they may deem necessary, and to manufacture iron and steel in all shapes and forms, *Provided*, They shall not at any one time have more than five thousand acres of land within the commonwealth, including leased lands. Such companies may issue bonds to an amount not exceeding three times the amount of their paid up capital, which shall be secured by mortgages on the property of the companies. The only clause of the new law which, we think, might have been omitted with advantage, is the following:

> That every company incorporated under the provisions of this act shall pay into the treasury of the commonwealth a bonus of one-quarter of one per centum upon the original amount of the capital stock, and upon any increase thereof, in five equal annual instalments, and such taxes as are or may be required by law. And the stockholders shall only be individually liable for debts due to the laborers for services, and in that case for no period exceeding six months.

What claim the State treasury has upon one-quarter of one per cent. of the capital of manufacturing companies we fail to discover, so long as they are required to pay full State and local taxes. It is not a very great amount, certainly, but it is the principle of the thing to which we object, since a powerful lobby influence could any time increase the percentage of the bonus demanded with a view to discouraging the organization of new companies to compete with those already in existence. The State has as much right to 10 per cent. as it has to one-quarter of one per cent. We do not suppose, however, that this provision will prove an obstacle to the enterprise which the new law is designed to encourage, although the $2500 which must be paid by every company organized on a basis of $1,000,000 capital would be much better invested in machinery and tools.

It is a good thing for the workingmen that their rulers and dictators, the leaders of the trade unions, gave them so long notice of the strike which they intend to order this spring. Now that the intelligent and industrious mechanics have had time to think the matter over, and to make up their minds just how great fools they would be to let the demagogues and loafers of the various trades throw them out of work for months, they are not as ready to play "follow my leader" as they were a few weeks ago; and while we hear mutterings of the threatened storm, it is impossible as yet to tell what it will amount to, or whether it will not blow over without hurting anybody. It is quite certain that some of the trades which were counted in by those seeking to make the strike general, have no sympathy with the movement, while in others more favorable to a strike, the organization among employers is so strong, and their ability to resist the unreasonable demands of the union so well known, that, in this instance, discretion is regarded as the better part of valor. Still there will in all probability be a repetition, this spring, of the silly performance of the unions in declaring the eight hour strike last year, and it is but little satisfaction to know that the men to organize and take part in it will suffer most heavily from it. But whatever the course adopted by the unions, employers will find it to their interest to keep business well in hand, and, if the trouble comes, their easiest, cheapest, and best way out of it is to show a determined front and refuse all demands of men on strike.

The Upward Tendency of Spelter in Europe and its Causes.

For the information of the metal trade we publish the following interesting correspondence, forwarded to us from Hamburg in response to inquiries from this office respecting the causes of the upward tendency of spelter on the Continent:

HAMBURG, March 7, 1873.

Messrs. Soltau, Trautman & Co.—DEAR SIRS: In answer to your inquiries about spelter we beg to state the following: The importation into, and, of course, the export from, Hamburg of Silesian spelter has of late years been on the decline, principally on account of the extraordinary demand for rolled zinc plates in the interior of Germany, in Austria, and, since the close of the Franco-German war, partially in the newly-acquired Imperial provinces, Alsace-Lorraine, entering duty free, as they do, the latter.

Last year the tendency was a rising one, and toward its termination, and early the present year, a further upward tendency was developed, due, in part, to the enhanced cost of production of the raw material, in consequence of the enormous rise in value of coal—a rise which equally influenced all other metals—and, in part, to the diminished export of spelter from Silesia. This export has, from an average of 200,000 to 300,000 cwts., gradually decreased to 100,000 cwts. last year, but will, in all likelihood, be on the increase again this year—the improvement in value all over the world naturally drawing it away from the country of production toward its most convenient port of exit, Hamburg.

The fluctuations in the quantity annually produced have been comparatively slight, varying, as the aggregate does, between 650,000 and 700,000 cwts.

Abroad its production is not inconsiderable. Belgium produces it, and in Germany we have Rhenish and Westphalian spelter. But con-

sumption, on the other hand, is on a vast scale also, and this is proved by the small stocks in England, in France and in the United States.

It would be wrong to insist that spelter has, in its trade movements, sought other channels of exit. Silesia has, it is true, forwarded a trifle through Stettin to the consuming countries, which does not weigh in the balance. The value on the spot here, to-day, is 28·80 Imperial marks, and for future, 26·50 to 26·80.

In the event of your transmitting any orders, you ought to leave a fair margin within your limits, so as not to be disappointed. For some time to come the tendency is likely to remain a rising one; at all events, this is more probable than the contrary.

We append, for further illustration, a table of spelter movements since 1854, and the course of values in marks Banco, and remain, dear sirs, respectfully, yours,

H. T. SCHLESINGER & C. DE VOSS.

STOCK IMPORT AND PRICES OF SPELTER AT HAMBURG.

Year.	Imports. Cwts.	Stock Dec. 31. Cwts.	Lowest. Marks.	Lowest. Shillings.	High'st. Marks.	High'st. Shillings.	Price Dec. 31. Marks.	Price Dec. 31. Shillings.
1854	313,000	90,000	13	..	15	12	15	..
1855	275,000	70,000	13	13	15	4	14	12
1856	360,000	40,000	14	9	18	..	17	4
1857	378,000	35,000	14	..	19	8	14	..
1858	265,000	35,000	14	..	17	11	15	4
1859	370,000	65,000	11	9	15	4	14	2
1860	245,000	80,000	12	9	14	2	12	8
1861	278,000	54,000	10	11	12	9	11	4
1862	295,000	100,000	11	4	13	7	11	10
1863	292,000	28,000	11	7	12	5	12	2
1864	520,000	55,000	11	14	16	8	12	12
1865	315,000	20,000	12	4	15	..	14	12
1866	345,000	30,000	12	8	16	5	14	10
1867	388,000	50,000	13	7½	14	9	13	12
1868	265,000	40,000	13	2	13	14	13	6
1869	236,000	40,000	12	12	14	8	13	..
1870	200,000	30,000	11	6	13	1	11	12
1871	160,000	45,000	11	9	14	10	14	14
1872	100,000	10,000	14	10	15	8	15	10

HAMBURG, March 11, 1873.

To the Editor of The Iron Age—DEAR SIR: In handing you the foregoing in answer to your inquiry concerning the advances in spelter, we beg to add that considerable sales have been effected last week, viz: 1000 cwts at 26 marks on the spot, and 11,000 cwts spring "futures" at 26·35 to 26·80; the market closing with considerable firmness. Of a special brand, 1000 cwts have sold since at 27 marks, and it seems to us that the market will still further advance.

Very respectfully, yours,

SOLTAN, TRAUTMANN & Co.

Effect of Cold on Iron and Steel.

To the Editor of The Iron Age:—Your request for discussion on the question of whether cold lessens the strength, toughness and elasticity of iron and steel is one to which I would give considerable attention, but, as concerns this communication, affords no time for answer other than that afforded by a hasty review of authorities newly in mind, and the reiteration of opinions formed on data already half forgotten. Promising at an early date to add to the present communication another more carefully prepared, I would briefly call your attention to facts demonstrated by the most carefully conducted experiments. I regret that the credit of these last belong wholly to foreign scientists and engineers—our own country, with fifty-four thousand miles of railway track, most of it subjected to wide extremes of temperature, having contributed practically nothing to the elucidation of a subject so closely concerning the safety of traffic and transport, and with important, though indirect bearings upon other departments of construction and engineering.

The discussion is not a new one, for years ago Fairbairn, Percy and Kirkaldy made it a matter of investigation more or less complete. Waving for the present their older trials, I would refer to those of more recent date. On January 3, 1871, experiments were made by W. Brockbank, at Salford, England, with a cast iron made from four kinds of pig, mingled to produce a casting of maximum strength, some good scrap iron being also added. The different castings were made from the same ladle, in molds from the same pattern, and subjected to the same tests. Quoting the exact language of Mr. Brockbank, the upshot is stated thus: "The results showed a gradual and considerable decrease of strength in the bars with the decrease in cold below the freezing point. They also lost their elasticity in a similar degree." Further trials, made a week later, confirmed the others, and also what the experimenter states to be the general experience of English iron founders. His language on this latter point is sufficiently explicit and valuable to warrant quotation entire.

"I found it," he says, "1. A general opinion that pig iron breaks much more easily in frost than in ordinary temperatures, and that breakages of castings are much more frequent in frosty weather. 2. In rolling mills, and particluarly where chilled rolls are employed, especial care has to be used in frosty weather to keep warm the rolls before using them, and when in use to keep them carefully covered from the frosty air. If not properly protected and carefully managed they are found to be very liable to fracture. 3. (on information). The cast iron wheels of the Stockton and Darlington Railway are found to fracture very frequently in frosty weather, and in a severe frost it is quite a serious matter. 4. On January 5, 1871, at 208° Fah., a hydraulic cylinder (at the works of Peel, Williams & Co.) had been cast upon a cast iron hollow core-bar, seven inches in diameter and one and one-fourth in. thick, and coated with 1½ in. of loam and hay. It was put out in the yard to cool during the severe frost, and when they came to draw the core-bar it broke by mere torsion and was found quite brittle; a portion of this core-bar was warmed and was found to have recovered its nature, and to have become quite strong and tough. The lowest temperature at this date was 19° Fah., and the casting was exposed to it for many hours. Numerous other examples could be given if required. There can, therefore, be no doubt whatever, that the strength of cast iron is very materially lessened by severe cold."

It will be noticed that the results above given were obtained under conditions closely analogous to practice; others tending to opposite conclusions have been made under conditions which, to me, seem to afford far greater opportunities for error. Notable among these are, with cast iron, those of Mr. Peter Spence, and detailed by him in a paper read by him before the Manchester Scientific and Literary Society, in 1871. In this case the specimens tested were planed down to rectangular cross-sections, and subjected to breaking strain by weights attached to the center, each bar being held up against the strain by a knife edged support at each end, the points of support being nine inches apart. Six experiments were made at a temperature of 60°, the bars breaking with an average of four hundredweight and four pounds weight. Six other experiments made with bars cooled to zero, by a freezing mixture, broke the bars with an average of four hundredweight and twenty pounds, the metal at zero requiring 3½ per cent. greater strain to fracture than at an approximately normal temperature.

The character of Mr. Spence's trials, as contradicting those of Mr. Brockbank, may be explained in one or another of several different ways. In the first place, some carelessness in the selection of the specimens may have taken all those tested at a low temperature from the strongest portion of the original casting; perfect homogeneity among the dozen different bars being rendered practically impossible by the planing to which they were subjected to bring them in uniform size and shape. The "skin" portion of the casting, as is well known, being much the strongest, a mere trifle in the greater or less thickness of shaving taken from the metal being capable of greatly modifying the strength of the resultant bar. Or, it may be that the metal was of exceptional character, as concerns its chemical composition, a matter occult and obscure, but one having possibly a most important reference to the problem in hand.

But it is more than likely that the manner in which the strain is applied may make much difference in the result of a given strain upon metal under the same conditions. A jar might break a bar that a greater force applied as pressure would fail to fracture; and, again, the relative powers of the same degree of jarring force, applied at ordinary temperatures, may be quite different from an equivalent force applied as pressure at a low temperature. Giving all due attention to arguments on the negative side, I am drawn definitely to the conclusion that frost, or low temperatures otherwise induced, does exert a decided and pernicious effect upon cast iron. And this opinion is strengthened not only by the known effect of varying temperatures on other materials, metallic and metalloid, but by results obtained by analogous tests made with wrought iron and steel, to which, in subsequent communications, I shall have occasion to refer at greater length. Respectfully,

JAMES A. WHITNEY.

Scientific and Technical Notes.

Mr. William Yates, of London, has been granted a patent for a

NEW MINERS' SAFETY LAMP,

which is said to be a great improvement upon that invented by Davy. Mr. Yates has removed the wire gauze from that part of it which surrounded the flame, and replaced it by a strong lens or bull's-eye glass on one side, and a silver reflector on the other. The result of this arrangement is that his lamp gives "a cheerful light estimated at 20 times that of the old Davy, and sufficient for all necessary purposes." By this means the temptation to expose the flame to obtain more light is removed. He further provides a complete check against the practice of heating the lamp by means of the flame, for it is placed so low that it cannot be made to approach the gauze either by the breath or by tilting the apparatus. He has remedied a third defect. The lower portion of the apparatus, containing the oil reservoir and the wick, which is screwed to the part which consists of the gauze funnel, the bull's-eye, and the reflector, has a spring bolt attached to it, which catches each time the screw is turned, and finally locks together the two parts of the lamp. The bolt is easily removed by another screw, but this cannot be done without at the same time withdrawing the wick and extinguishing the flame, and it thus becomes impossible to obtain a light by opening the lamp. The new invention thus remedies the chief defects of the old lamp, and those to which the accidents still occurring in mines are chiefly attributed. The apparatus seems strong, little likely to get out of order, and altogether well adapted for the rough usage to which a miner's lamp is likely to be exposed. It is much more expensive than the forms of the lamp now in general use, but it is said that the saving of oil effected by its use will in one year pay the additional cost. When the principle of the Davy lamp was made known by its inventor, it was supposed that a means had been discovered of putting an end to all accidents from fire damp—and so far as these arose from the immediate contact of a naked flame with the explosive gas this has been proved to be the case. But there were many objections to the old lamp which interfered with its usefulness. It gave too little light, and it was easily opened. In consequence the miners, a proverbially reckless class, in order the better to see their work, or even simply to obtain a light for their pipes, were constantly tempted to remove the protecting gauze and exposed the naked flame. This practice has been checked, no doubt, by putting a lock upon the lamps. It has been found, however, that even when this is done the lamps can be tampered with. The flame can be made to strike against the wire gauze in such a way as to enable the workmen to obtain a light at the heated part, and this, in fact, is constantly done, fearful as the risk is. It has been said that no explosions from fire damp could occur in mines if the safety lamp were properly used; and yet the number of deaths arising from such accidents still amounts to about 300 a year.

In the course of some wrecking operations lately undertaken in Charleston harbor, an interesting evidence of the

FORCE OF GUNPOWDER

was given. The Charleston *News* says:

Doubtless there are many Charlestonians who still remember the terrific detonations caused by the explosions of the Confederate iron-clads Charleston and Chicora, in Cooper River, opposite Marshall's Wharf, at the evacuation of Charleston in February, 1865. It has always been a matter of surprise to the wrecking fraternity that only a small portion of the wreck of the first named boat could be found in the vicinity of the spot at which she was anchored. Professor Maillefert, whose fame as a wrecker is so well known to the Charleston public, has for a long time occupied himself with the solution of this riddle. A few weeks ago he accidentally observed a strange rippling of the water surface 450 yards, more than a quarter of a mile, eastward of the wreck of the vessel, and it at once occurred to him that the phenomena afforded a clue to the mystery. He accordingly anchored one of his derricks above the spot marked by the ripple, and an examination revealed lying upon the bottom of the river the iron sheathing of the bow and one entire broadside of the vessel, constituting a mass of iron weighing altogether 212,750 pounds, or nearly 100 tons. The whole broadside of the battery with the porthole was intact. That this immense mass of iron should have been hurled through the air for more than a quarter of a mile affords a startling illustration of the force of the explosion. This discovery has led Professor Maillefert to suppose that the other half of the Charleston is lying about the same distance on the opposite side of the anchorage, and he has already begun to search for it.

In the course of a lecture lately delivered at Chicago, an account was given of some curious feats in

TELEGRAPHING WITHOUT AN INSTRUMENT,

from which we take the following: On March 2, 1868, a train on the Bennington & Portland Railroad was snow-bound about three-fourths of a mile from Shaftsbury. The weather was intensely cold; there were no provisions on the train; fuel was nearly exhausted; night was approaching, and the situation began to look desperate. Mr. Hill's two small children were with him, and one of them, too young to be fed with arguments, clamored for something better. The superintendent of the road, Mr. F. C. White, was on the train, but, strange to say, the snow wouldn't clear the tracks for a railroad king. In his helplessness he was entirely at a loss for any means of relief, until Captain Hill, without instrument of any kind except the wire on the poles, proposed, nevertheless, to telegraph to Rutland. The superintendent was incredulous, but Captain H. quickly cut the wire, and communicated with the officers of the road at Rutland by merely striking the ends of the wire together, thus making and breaking the telegraphic circuit as he could have done with the key of an ordinary operating instrument. An engine was immediately sent to the relief of the blockaded train. But the entire operation required the receiving, as well as the sending, of messages. This was the crucial test of Captain Hill's ingenuity, skill and nerve, and until this was accomplished the superintendent and passengers felt no assurance that the message sent had been intelligibly communicated to the officers at Rutland. Striking his wires together, he wrote to the operator at Rutland as follows; "Trouble. Answer slowly. I am working without an instrument. I will receive your answer through my tongue." He touched the frosty wire to his tongue with the same result, at first, as that enjoyed by the boy who undertook to lick the frost from his skate steel, but found that the steel knew more about licking than he did. The wire wouldn't let go until it was warmed, and then kindly took the skin off with it. So the wire was lengthened and carried into the car. After it was warmed, Captain H. received the messages by putting one end of the wire above and the other under his tongue, and letting the electric current pass through it, when he was able to read by the succession of sharp and somewhat painful electrical shocks. His success was perfect, and he not only sent and received messages for the superintendent, but for several of the passengers. The only ill consequence of the exploit was the total loss of taste which Captain H. suffered for several days afterward.

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Prices of Pig Iron for the first week in each month of 1872 in New York, Boston, Philadelphia, Pittsburgh, Cincinnati, Cleveland, Louisville, etc.
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BOSTON, Nov., 20, 1872

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Trade Report.

OFFICE OF THE IRON AGE,
WEDNESDAY EVENING, April 2, 1873.

The past week has been one of more than ordinary excitement in Wall street, and looking back at the events which have transpired, it is easy to see how narrow was our escape from a disastrous panic. The circumstances are, briefly, as follows: For some time past the principal houses operating in stocks have had recourse to the expedient of borrowing Sterling Bills of Exchange when the banks could not accommodate them with loans, thus making London carry the speculations of the New York Stock Exchange. Partly to put a stop to this business, and partly for other reasons, the Bank of England advanced its minimum discount rate to 4 per cent. on Wednesday last, which, as may be supposed, caused a commotion here. It was currently reported, and believed, that the amount of such bills outstanding in the market was about fifty millions, and had this been the case it would have been difficult, if not impossible, to have averted widespread financial disaster. It is probable, however, that the amount is less than $10,000,000, and the discovery has relieved a great deal of anxiety. We have no doubt that, at one time, the total was considerably larger than it is now, but the shrewder operators foresaw the trouble ahead, and long ago began a systematic reduction of the amount, and much of the alarm felt here was, therefore, causeless, although it will not be without good effect.

The turn in the London money market was at once felt in this. Gold advanced on Wednesday last to 116¼, on Saturday to 117 and on Monday to 118⅛, and the speculation thus caused resulted in demoralizing the other markets. On Monday the rate on call loans advanced to ⅝ of one per cent. per day, or about 270 per cent. per annum, and millions were borrowed at these figures; one of the reasons for this unprecedented stringency being that the speculators in gold were also engaged in locking up currency. Added to this was the inability of the banks to increase their discounts, and the fact that the only recourse of borrowers—the foreign exchange market—was threatened by the action of the Directors of the Bank of England. Another cause of alarm was the announcement made on Monday that the Treasury programme for April provided for the sale of $6,000,000 gold, and the purchase of only $1,000,000 of bonds, which was construed to mean active money for the next four weeks; and the situation was further complicated by the recall, by the city, of a good deal of money lent out through the banks—a combination of causes well calculated to produce the results above noted.

The gold market was the scene of an excited speculation, and its course for the week will be seen from the following comparison of highest and lowest daily quotations:

	Highest.	Lowest.
Thursday	116¼	115⅞
Friday	116¾	116⅜
Saturday	117	116⅝
Monday	118⅛	116¾
Tuesday	117⅝	116⅞
Wednesday	117⅝	117

On Saturday the stock market, which, up to that time continued strong, began to weaken. On Monday everybody wanted to sell, and prices declined on the entire list. The principal dealings were in New York Central, Lake Shore, St. Paul, Pacific Mail, Western Union, Union Pacific and Boston. Hartford & Erie. The highest and lowest of to-day's quotations of active shares are given below.

The bond market remained strong up to Tuesday, and was then demoralized by the speculation in gold. State bonds were dull and lower, and railroad bonds were strong on a small demand. The closing quotations of governments are given below.

The following are the foreign trade movements for the week:

IMPORTS.

	1871.	1872.	1873.
Tot. for week	$11,930,286	$9,641,944	$13,884,598
Prev. reported	81,271,885	90,065,508	99,447,942
Since Jan 1	$93,202,171	$99,707,452	$113,332,540

EXPORTS, EXCLUSIVE OF SPECIE

	1871.	1872.	1873.
For the week	$4,441,092	$4,078,234	$5,361,289
Prc. reported	54,514,630	48,937,989	59,026,609
Since Jan. 1	$58,955,722	$53,016,223	$64,387,898

EXPORTS OF SPECIE.

Total for the week	$676,712
Previously reported	12,843,681
Total since January 1, 1873	$13,520,396

The bank statement shows that there has been a decrease of $594,425 in the lawful money held by the banks as reserve, the banks now being $377,200 under the 25 per cent. requirement, while last week they were $217,225 above. The national banks hold $656,450 above the 25 per cent. requirement against $983,175 last week. The State banks are $1,033,650 below a 25 per cent. reserve against $765,950 last week. The following is a comparison of the total national and State averages of the past two weeks:

	March 22.	March 29.	Differences.
Loans	$275,198,800	$274,348,700	Dec. $850,100
Specie	17,472,300	16,179,100	Dec. 1,293,200
Circ'lation.	27,613,600	27,635,700	Inc. 22,100
Deposits	194,623,500	193,508,700	Dec. 1,114,800
Leg. Ten.	38,304,200	38,729,800	Inc. 425,600

Government bonds close at the following quotations:

	Bid.	Asked.
U. S. Currency 6s	113¼	114
U. S. 6s, 1881, reg	116¾	117
U. S. 6s, 1881, c	119⅝	119⅝
U. S. 6s, 5-20 reg. May and Nov. ex. int.	111¾	112⅛
U. S. 6s, 1862, c	115¾	116⅛
U. S. 5-20 1864, c	116¼	116⅛
U. S. 5-20 1865, c	117⅛	118
U. S. 5-20 1867, r. Jan. and July	115⅜	116
U. S. 5-20 1865, c. Jan. and July	115⅜	116⅛
U. S. 5-20 c. 1867 " "	117⅛	117⅛
U. S. 5-20 c. 1868	116⅜	117
U. S. 10-40 reg.	111	111⅛
U. S. 10-40 c	111¼	111⅜
U. S. 5s 1881 reg.	113⅛	114⅛
U. S. 5s 1881 cou	113¼	114⅛
Cen. Pac. Gold Bonds	102¾	103⅛

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	101⅝	100⅞
Lake Shore	92⅞	91⅞
Rock Island	114¾	113⅝
Wabash	72⅞	72
Harlem	137	132
Western Union Telegraph	85⅝	83⅞
Northwestern	78⅝	78
Northwestern Preferred	88	87
Milwaukee & St. Paul	60	59
Pacific Mail	56⅛	55⅛
Erie	64⅛	64⅛
Ohio & Mississippi	45⅝	44⅞
Boston, Hartford & Erie	4⅞	4⅛
Union Pacific	84⅞	84
C. C. & I. C.	39¼	38⅝
Consolidation Coal	56⅛	55⅛

GENERAL HARDWARE.

Although we have still to report a general dullness in trade, better accounts are received from the West, and the feeling prevails that a little later in the season a good demand will spring up.

The different companies manufacturing Wood Screws held a meeting last week and adopted a new list on small Iron Screws of all lengths, from No. 0 to 7 inclusive, and fixed a new scale of discounts as follows:

Flat Head Iron	dis 47½ %	instead of	dis 50 %
Round Head Iron	dis 45 %	" "	dis 40 %
Flat Head Brass	dis 60 %	" "	dis 40 %
Round Head Brass	dis 50 %	" "	dis 10 %

The list prices of Brass Screws are unchanged. The following table shows the new and old list on all the sizes which are changed.

IRON SCREWS.

	New List.	Old List.		New List.	Old List.
	¼ INCH.			⅝ INCH.	
No. 0	·34	·50	No. 3	·36	·53
1	·34	·50	4	·38	·55
2	·34	·50	5	·46	·58
	⅜ INCH.		6	·56	·63
No. 1	·34	·50	7	·65	·68
2	·34	·50		¾ INCH.	
3	·34	·50	No. 4	·40	·53
4	·34	·50	5	·50	·63
5	·42	·53	6	·60	·68
6	·49	·55	7	·70	·74
7	·60	·63		⅞ INCH.	
	½ INCH.		No. 5	·54	·68
No. 2	·34	·50	6	·63	·71
3	·34	·50	7	·72	·76
4	·34	·50		1 INCH.	
5	·42	·53	No. 5	·61	·76
6	·49	·55	6	·70	·79
7	·60	·63	7	·80	·84
	⅝ INCH.			1¼ INCH.	
No. 2	·36	·53	No. 7	·92	·97

On Flat Head Iron Screws the reduction in net prices, on Nos. 0 to 4 inclusive, is about 40 per cent.; on No. 5, about 16 per cent.; on No. 6, about 7 per cent., while No. 7 will net about the same as before. In the higher numbers the reduction of discount, while the list remains unaltered, makes an advance of 5 per cent. On Round Head Iron Screws prices are considerably reduced. Flat Head Brass are reduced 33⅓ per cent., and Round Head Brass about 45 per cent. Notwithstanding the large reduction on some kinds of Screws, the quantity of these in any Hardware stock is so small in value that the advance of 5 per cent. on all the larger sizes will much more than balance the reduction. The object of this action is avowedly to prevent the importation of Brass Screws and small sizes of Iron. The sale of Brass Screws, in particular, by the American manufacturers has of late been falling off materially, and this is charged to the importation of foreign goods. We are assured, however, by large importers, that the importations of Brass Screws have also very largely fallen off. We presume the fact is that Brass Screws have been held at prices unreasonably high (if such a term may properly be applied to Screws), and that the high price has prevented consumption. We have received the following letter:

PHILADELPHIA, April 2, 1873.

To the Editor of The Iron Age:—The increasing importation of English Wood Screws shows that the bargain made between the American and English monopolists (under which for a large money consideration the English company were to charge a higher rate, amounting almost to a prohibition), has expired by limitation or otherwise.

To meet the competition on small sizes of English Screws (which, on account of the present tariff, framed by Mr. Jencks in the interest of the American Screw Company, are most advantageously imported), the American Screw Manufacturers met last week in Hartford, Conn., and reduced the list on thirty-four smallest sizes Iron Screws, forming, perhaps, less than one-fifth the magnitude of sales, and advanced all the other sizes by five per cent.

The English makers began to realize that the value of this market to them exceeds the consideration heretofore given for it, and they are now sending out large quantities of Screws. These, together with the increasing production of the Hartford, Meriden, Dayton and Cleveland companies, will, we think, soon flood the market and enable consumers to obtain their supplies—if not as cheap as Nails—at least for one-half the prices at which they are now sold.

We look for an early beginning of the downfall of the outrageous monopoly, and would advise dealers to be careful in their purchases, lest heavy decline catches them with large stocks on hand. DEALER.

There is an improved demand for foreign Hardware this week, and but few changes to note. Imported Wood Screws have been changed to conform to the American Screw Company's revised list of 1st inst. The following are to-day's quotations, in currency, from the new list: George W. Bruce quotes Nettlefold & Chamberlain's Flat Head Wood Screws discount 47½ and 7½; Round Head Bright, 45 and 5; Round Head Blued, 45; Brass Flat Head, 60 and 5; Round Head Brass, 50 per cent. Alfred Field & Co. quote their Flat Head Wood Screws at discount 47½ and 15 per cent., and Brass Screws at discount 60 and 7½ per cent. Hermann Boker & Co. quote their Flat Head Wood Screws at discount 50 and 15 per cent.

Late English advices report an advance in Curry Combs, which are now quoted at add 40 per cent., formerly 25 per cent. advance. Atwood's Hammers are now held at 35 / per cwt. for Hand and 33 / for Sledge. Brades Trowels are quoted in England at 10 per cent. advance on list. Peter Wright's Vises are now held at 4¾d., formerly 4½d. per lb. Butcher's Files and Edge Tools are quoted here at $5·50, and Goodlad's Files at $4 to £, gold. Both German and English Guns have advanced. The following figures for German Guns will give some idea of the market: Boys' Guns, $2·25, formerly $1·50; Men's Guns, $2·75, formerly $1·80; Common Double Guns, $5, formerly $3·75 to $4, all gold. Hermann Boker & Co. quote their Bright Wire Goods, discount 60 and 10 per cent. Coil Chain and Traces are without change. Peter Wright's Anvils are firm at 12½ to 13 cents, gold.

Nails are in good supply, but the demand is light, owing to the fact that buyers decline placing orders other than for immediate wants until the opening of navigation. We quote $5·25 for 10d. to 60d., less the usual discount for quantity. Lots of 500 kegs and over could be placed at $5, net, for 10d.

On the 1st instant the manufacturers of Cordage reduced the price of Manila and Sisal Rope ½ cent. per lb. Below we publish the new prices:

Manila Cordage, sizes above 12 th'd	18½ cts.
" " 6 th'd and 9 th'd (¼ in. and 5-16 in. diam.)	19½ "
Manila Cordage, 12 th'd (⅜ in. diam.)	19 "
" Hay Rope	19 "
" Cordage, bolt rope yarns	20½ "
" " " " 6 th'd and 9 th'd	21½ "
Tar'd Manila	18 "
Fine Tar'd Manila Lath Yarn	19½ cts.
Sisal Rope, sizes above 12 th'd	16 "
" 6 th'd and 9 th'd	17 "
" 12 th'd and Hay Rope	16½ "

The price of Bright and Annealed, Coppered, Fence and Grape Wire was fixed on the 1st inst. as follows:

Bright and Annealed Wire Nos. 0 to 18	dis 25 @ 30 %
" " " " 19 to 26	dis 35 @ 40 %
" " " " 27 to 36	dis 40 @ 45 %
Coppered Wire, Nos. 0 to 18	dis 20 @ 22½ %
Annealed Fence, Nos. 8 and 9	dis 25 @ 30 %
" Grape, Nos. 10 to 14	dis 25 @ 30 %

The discounts given above show a decline on former quotations of about 5 per cent.

The Stanley Rule and Level Co. have just introduced a new feature in connection with the ordinary Plumb-bob. A brass wheel is placed inside the upper section of the Plumb-bob, and this acts as a reel upon which to wind the line used with the tool. The action of a steel spring upon the wheel serves to hold the Plumb-bob at any desired point on the line when in use, and the line can be readily wound back onto the reel, making a most convenient method of keeping the line ready for immediate use. The Plumb-bobs are of brass, with steel points. List price: large, $2·50; small, $2, each. Discount 15 and 10 per cent.

We have received from Landers, Frary & Clark a copy of their new illustrated Catalogue and Price List, including all the Hardware goods they make, except Table Cutlery, for which they have no printed list, but will furnish net prices on application. They have full size cuts of Brass Cocks, Oil Faucets, Molasses and Water Gates. They also illustrate a full assortment of Spring Balances, including a new line of Family Scales. Also many other goods. They are now sole agents for the Wm. Rogers Mfg. Co.'s Plated Forks and Spoons. Their new office and sample room, No. 298 Broadway, is handsomely and conveniently fitted up. The following gives all the important changes in their discount sheet, dated April 1st, which will accompany their book:

	Dis. per cent.
Brass Racking Cocks	10&10
" Wine Cocks	10
" Bottling Cocks	10&10
" Globe Cocks	10&10
" Cocks	10&10
" Bibb Cocks	10&10
" Miss. Gauge Cocks	25
" Lager Beer and Ale Cocks	20
" Beer Vents	10
" Water-Cooler Cocks	10
" Urn Cocks	20
Cork Lined Faucets	55&10
Turnbull's Market Scales	15
Standard Family Scale	15
Turnbull's Family Scale	15
" Counter Scale	15
Tea and Hatch Scales	10&10
Union Scales	10
Bright Iron and Brass Screw Eyes	60&10
" " Hooks	60&10
" Brass Gate Hooks and Eyes	60&10
Bright Cornice Hooks and Eyes	60&10
Cottage Bird Cage Hooks	15
Bright Wire Screw Meat Hooks	60&10
Wrought Meat Hooks	20&10
Pointed Belt Hooks	45&10
Drawer Pulls (Nos. 150 & 160, 40 per cent.)	50
Casters—all kinds	20&10
Blake's Pattern Nut Crackers	40&5
Mouse Traps	50
Coffee-Pot Stands	40&5

The following is the new discount sheet of Douglass Mfg. Co. The high price of English Edge Tools makes American goods of equally good quality much cheaper; and buyers are becoming more and more convinced of the fact.

	Dis. per cent.
Socket Framing Chisels, Extra	50&20
Socket Framing Chisels, No. 1	50, 20&10
Carpenters' Slicks, Socket Framing and Corner Chisels	50&20
Drawing Knives, Extra	50&20
" " No. 1	50, 20&10
Shingle Shaves and Drawing Knives	50&20
Socket Firmer Chisels, Extra	50&10
" " " (5 in. blade)	50&20
" " " (4½ in. blade)	50, 20&10
Farmers' Socket Framing Chisels, New List	50&20
Superior Socket Firmer Gouges	30
Scratch Awls	30
Tang'd Extra Firmer Chisels, and Gouges	40
Firmer Gouges and Chisels, No. 1	40&10
C. S. Screw Drivers, Extra	25
C. S. Screw Drivers, No. 1	20
Improved Boring Machines and Tap Borers	20
Chisel and File Handles	20
Wood Boxes	10
Chalk Line Reels and Awls	20
Brad Awls, with Fancy Wood Handles	20
Fancy Brad Awl Handles	20
Plain Brad Awl Handles and Awl Hafts	30
Cook's Patent Augers	40
" Bits	25&10
Douglass Mfg. Co.'s Augers and Bits	25
Carpenters' Augers	25&5
C. S. Bits, No. 1	25&5
Patent Auger Handles, less than case (25 set), 10 per cent.; in cases (25 set)	20
Screw Driver Bits and Counter Sinks, $1·50	net.
Carriage Makers' Plug Cutters	10
Gimlets and Gimlet Bits	20
Expandin / Hollow Augers	20
Cast Steel Spoke Trimmers	20
Mortising Machines & Chisels	20
Blake's Pat. Extension Bits	25&10
Tool Chests	20
Isbell Hollow Augers	25&10
Swan Auger Handles less than case	10
" " " by the case—25 sets	20

Burden's Horse Shoes have been advanced to $6·25 per keg in Troy, or $6·37½ here. Providence Shoes have been advanced to correspond. Wrought Brass Butts were advanced on the 1st inst. to discount 20 per cent. No change was made in the list, except in the article of Piano Hinges. What these changes were we were not able to learn.

The following letters were crowded out of our last issue:

To the Editor of the Iron Age: DEAR SIR.—In answer to some remarks of "Hardware", an article of mine was published in your paper of the 13th inst., in which occurs the following statement. "So entirely are the manufacturers in the hands of the hardware men, that it requires from three to four months for the former to make *and realize* an advance in the prices of their goods; and during all that time they are delivering goods on old contracts at cost or less, (for no advance is attempted until necessity compels it) while the hardware men are reaping enormous profits out of their contracts. And when these contracts are drawn up (meaning when deliveries under them are completed) two or three of the heavy jobbers coming into the market again with their orders, soon offer a temptation to some one of the weaker manufacturers; he sells and the market breaks; and so what was nominally an advance for the manufacturer is ultimately a profitable operation for the jobber, and the market is kept in a continual and unnecessary state of fluctuation for the sole use and benefit of the hardware jobber, whose interest is is to maintain this state of affairs, and who deliberately labors to raise and depress the market accordingly as the market requires."

In full corroboration of this statement, I refer to the history of the recent changes in the price of Locks, as given in the letters of "Lock Jobber" and "Old Honesty," also published in your issue of March 13th. To quote the testimony of an adverse witness, Old Honesty, "There has been but little, if any, money made by the Associated Lock Makers for the last three years, *the bulk of the deliveries since the advance in prices last season having been on sales made previous to the advance.*" The price has now dropped, and consequently the Lock makers have made nothing out of the nominal advance, while the jobbers have had the benefit of it in their sales to their customers. All that troubles "Lock Jobber" and "Old Honesty," is the fact, that some other jobber got unloaded and ready to operate for lower rates before *they* did, and the market is knocked down at a time which is a little inconvenient for them. Too bad; but then they shouldn't have been quite so greedy; and when the manufacturers, in accordance with a vicious trade custom, informed them that they were selling Locks below cost and should soon advance the price, and gave them a chance to put in orders for a few, they should not have been so inconsiderate of the interests of manufacturers as to put in orders for all the Locks they could sell for several months to come. If one receives an invitation to dinner, it is hardly fair to carry his trunk and stop a week with his entertainer; and if "Old Honesty" and "Lock Jobber" have taken an undue advantage of a trade courtesy, it is a little "cheeky" of them to rush into the public points and belabor the manufacturers for the consequences of their greediness.

It is not natural that there should be a state of hostility between manufacturers and jobbers. When each is working in his own sphere their interests are not conflicting, and they can work together and be mutually benefited. The present apparent conflict of interests arises, as it seems to me, from the fact that the jobbers have stepped outside of their proper limits, and are standing between the manufacturers of some articles of hardware and their legitimate customers, to the detriment of both manufacturer and customer, and without any advantage to themselves. Any retail dealer who can buy goods of large consumption in the original packages is the legitimate customer of the manufacturer, and can be supplied more cheaply without the intervention of a middleman than with it. The province of the hardware jobber is to break the original packages of articles of large consumption, and to make from these and from the original or broken packages of articles of smaller consumption, such collections of the thousand and one matters, each small in itself, but amounting, in the gross, to a large value, as go to make up the stock of a retail dealer in hardware. If the jobber will confine himself to this, his proper department, he will not come in conflict with the manufacturer, and will not have any cause to complain that he is not protected in his sales. It is only when he forces himself into a false position, and endeavors to usurp a trade which is not his, that he comes into conflict with the manufacturer.

It is as well that the jobbers should understand that the manufacturers of articles of large consumption are under no obligations whatsoever to them for the distribution of their goods. Not a keg more of Nails, or a package of Screws, or a box of Locks, or a dozen of Shovels, is sold by their intervention than without. These are not consumed in consequence of the jobbing hardwaremen's having them for sale. Houses will be built, cities grow, and railroads stretch out their length just as rapidly without them as with them. Neither is the sale of goods to them in large blocks any benefit to the manufacturer. As a rule, these sales are generally simply contracts to deliver at the convenience of the jobber, the goods to be paid for 30 or 60 days after taking away. They are not taken until the country demand comes in, and that demand would of itself flow directly to the manufacturer if the jobber were out of the way; and, consequently, the manufacturer would deliver his goods just as early and get his money just as promptly (and considerably more of it) without the intervention of the jobber as with it. And all this he could do without any material addition to the cost of the agencies for selling, which every large manufacturing company maintains. Of course, I do not mean that any one company, as trade now stands, could be independent of the jobbers' orders; but I mean that the manufacturers of articles of hardware of large consumption, as a class, would be better off if the hardware jobbers, as a class, would discontinue the sale of their goods. I make this explanation because I am afraid that if I didn't, Mr. "H. O. P." who publishes an article in your issue of 20th, and who seems to be a very peppery old gentleman, would threaten not to send me any more orders, since I think jobbers' orders are of no benefit. I think that argument would be about his calibre.

It isn't likely, though, that the jobbers will adopt the terrible threat of "Hardware" and give up the sale of Axes, Shovels, Nails, Horse Shoes, Screws, &c. But it is to be hoped that, at some time or other, manufacturers will put an end to the mischievous custom of taking orders for goods not in store, and not wanted for immediate delivery. Such orders are, of course, given only upon the eve of an advance in prices, and make such an advance a merely nominal one to the manufacturer, while they put the control of the market and the trade of all the smaller customers into the hands of the jobbing hardware man.

Mr. "H. O. P." seems more troubled about my standing as a manufacturer than the force of my statements. I assure him that my status does not affect my logic, any more than the extent of his warehouse, which seems to be very large, is commensurate with the capacity (apparent) of his brain. But in order to relieve him, I will say that my manufacturing operations are on quite a respectable scale. And in consideration of this indulgence on my part, I hope he won't take it amiss if I recommend him, in case he proposes to appear in print again, to look up his Mythology, so as not to say anything more about "Plutus," and to review his English Classics again, so as to recall to his mind what my Lord Bacon says about ridicule. MANUFACTURER.

PHILADELPHIA, March 25th, 1873.

To the Editor of The Iron Age: DEAR SIR.—If not considered inconsistent as your regular correspondent to devote this letter to the points contained in certain articles which have appeared in *The Iron Age* during the last three weeks, you will please publish it. We think both the jobber and manufacturer have taken extreme positions in making their statements. Referring to the first article upon the subject, we would say, we consider the expense of doing business an overestimate. Our experience has been that $1,000,000 of Hardware can be sold at an average expense of 25 per cent. less than that given by the original article for the year 1872, and those expenses including interest on capital and bad debts. We also feel justified in saying our experience has been the experience of other Philadelphia houses doing a less amount of business. We acknowledge to do this it is necessary for members of the firm to give their undivided time and attention to their business, which will enable them to conduct the same with many less clerks and in a more economical manner. But we cannot see how the manufacturer could possibly conduct the business of distribution to the small trade at a less expense than parties who make it their especial vocation to buy and distribute the goods. The "Manufacturer," in his article, also certainly takes an extreme position when he states "the sooner the jobber discontinues the distribution, the better it will be for both manufacturer and consumer." Competition is certainly quite as great between manufacturers as between jobbers; consequently, catalogues, advertising, rent of building and commercial travelers quite as necessary, and equally as expensive in the hands of manufacturers as in the hands of jobbers. Neither can we see how insurance, clerk hire and interest could be reduced in their hands; and for each manufacturer to keep up his agencies by expensive men, whilst he is at home producing, could not help but be much more costly than when his entire line of goods, together with ten thousand other varieties, could be collected into one establishment. The amount of losses would naturally be greater when each manufacturer undertakes to distribute his goods to all the small trade throughout the country.

The small trade would be induced to buy in larger quantities, to enable them to make up respectable packages from the limited line made by any one manufacturer in the country, and often overstock himself. The result, in many cases, would be disastrous to both parties. Is the "Manufacturer" consistent? He first asserts that the sooner the jobbers will discontinue this business of distribution the better it will be for the manufacturer and consumer of the standard articles mentioned. Also, "the jobbers are now occupying a position which is of no earthly benefit to any one excepting themselves." Again, "Can any one tell in what way the interests of the public are served by having a set of middlemen standing between the manufacturers and the small traders, by whom Horse Shoes, Screws, Nails, Shovels and Axes are distributed to their customers." He subsequently answers his own question, first, by asserting that, "Excepting where the manufacturer of an article holds a monopoly, and can enforce his regulations, the jobber himself is the very first to break the market by dividing his discount with his smaller customer;" then by asking, "Is it not a notorious fact that the jobbers do not avail themselves of even the moderate discount that is given upon the classes of goods quoted by "Hardware?"

The plain English of this is, that the manufacturer complains that jobbers sell their goods at too small an advance. Whether they are wise in so doing, each must judge for himself, but certainly "dividing his discount" with his retail customer is a benefit to the latter, and through him to the consumer.

Next, is the manufacturer of the above named goods injured? Generally they give a price and allow a discount from that price for given quantities. As we understand it (with few exceptions), these quantities are open to any one to purchase, whether a hardware jobber, retailer, or consumer. Quantity carries the price, not the class of trade or consumption.

Does the division of discount with the small trade injure the manufacturer? He has sold his goods, received his pay and made his profit, and should be satisfied. He cannot sell the same goods twice. The jobber yields the difference in price from his own pocket; he does not take it from that of the manufacturer. How, then, is the latter injured, although the consumer is certainly benefited.

But "Manufacturer" is solicitous lest the hardware jobbers should eventually "dictate their own terms to the manufacturers." What has the able management of the American Screw Co., or of Messrs. H. Burden & Sons, to say of such a fear? Has anything occurred within their experience to cause them to tremble in anticipation of such a catastrophe? We think that if every jobber of hardware in the United States were to decline to sell the products of those factories, that by some means horses would be provided with Burden's Shoes, and mechanics continue to use American Screw Co.'s Screws.

We would ask our readers to imagine for a moment whether or not the manufacturers of American Screws could distribute their entire production to the small trade as economically to them as the jobber is now doing it for them; if not, would they add the additional cost to the price of Screws. Can the manufacturer of Barber's Braces distribute their Braces throughout the country at the price the jobber is now doing and still make as much money upon them? If they cannot, who but the consumer must pay this extra expense.

In a conversation, a few days ago, with a person connected with a prominent manufacturing establishment, the writer was informed that some months ago they decided to canvass the small trade of Pennsylvania. The agent was sent out to solicit orders for their line of goods, and when he returned, the expenses upon his actual sales were 50 per cent.

The writer, some two years ago, was on a visit in a country town; whilst there, he saw the agent of an Eastern manufacturer soliciting orders. Being much surprised at this, talked with the manufacturer one year later, and was informed the trip was made through these small towns at an expense of one hundred dollars ($100), and the agent sold three hundred dollars ($300) worth of goods, 33⅓ per cent. expense upon his sales. Why have the manufacturers of Table Cutlery withdrawn their stocks from the New York agencies? For no other reason than to reduce their expenses; they cannot keep them up at the small expense jobbers are able to handle these goods. As manufacturers of certain lines of goods, we know we make a better net profit upon our goods selling to jobbers at our large quantity discounts, than by selling in small quantities to the regular trade or on the road.

We were informed by a prominent manufacturer, within the last two years, that he came to Philadelphia, remained over one night, and sold over $10,000 worth of goods. This was done at an expense, whilst in Philadelphia, of $4: the entire expense from the time he left his factory until he returned was probably 1-10 of 1 per cent. on the sales made. Allow the same manufacturer to canvass the small trade of any one State and ascertain the difference in cost in selling the same amount. Does the manufacturer lose anything by giving the jobber the difference between the cost of selling in large and small quantities? If not, does the consumer lose by his so doing? Is it not another great advantage to receive orders in advance and out of season, and ship as finished? Otherwise, would they not be compelled to stock up these goods as the jobber does now, and at the same expense the jobber now has? We can plainly see where the manufacturer of a small line of goods and jobber of a large line can do business as cheaply as a jobber only, but we cannot see how any small manufacturer can canvass the country, carry the stock to fill each small order, and realize as much net profit as the distributing jobber pays him. The jobber having advantage of profit upon his importation stock of goods, together with a thousand articles made by no two manufacturers, can, if his business is properly conducted, give the small trade advantages it is not possible for them to receive in buying direct from an exclusive manufacturer, for the reasons given above. We guarantee an assorted bill, say $200 worth, of hardware going out of our store would often embrace a line made by 40 different manufacturers, this average being $5 to each manufacturer. The small trader can tell whether it is an advantage in the matter of freight alone to have shipments of this magnitude made him, or whether he would like to be dunned by forty houses instead of one house, when his anticipations in sales and collections have not been realized, and he unable to make prompt payments.

We think the interest of manufacturer and jobber identical, and with business properly conducted by both parties, there can be no cause for antagonism. Yours, truly,

LLOYD, SUPPLEE & WALTON.

IRON.

American Pig.—The demand for American Iron continues light, but prices are generally held very strong. Rumors are current, once in a while, of lots offering at lower figures, but, when traced, generally turn out to be either inferior iron, or the report without foundation. Prime brands of Lehigh No. 2 are held firm at $48, and we understand that a lot of Crane offered below that figure was bought in by the company. For No. 1, $50 is freely offered. Sales during the week include 100 tons No. 1 Carbon at $50; 100 tons No. 1 Lehigh at $50; 300 tons No. 2 Carbon at $48, and 100 tons No. 2 Crane at $46, probably the lot referred to above. We quote No. 1 at $50; No. 2 at $46 @ $48, and Gray Forge, $40 @ $42.

Scotch Pig.—The general features of the market for Scotch Iron remain as noted for several weeks. Transactions are very light, buyers taking only small lots for pressing requirements. The strikes abroad are now about ended, and work has partially been resumed, but the bare stocks can not for some time be replenished, owing to the large demand which always exists upon the opening of navigation on the Continent of Europe. There is, however, very little demand abroad on American account, notwithstanding a trifle reduction in prices and the low freights offered to New York. The price is still so high, in comparison to the returns that can be secured here (coupled with the advance in gold), that it has the effect of deterring the boldest importer from encouraging consignments. Sales include only 250 tons Glengarnock, part at $57, from yard, and a small lot Gartsherrie at $60. We quote: Gartsherrie, at $60; Glengarnock, at $55@$56; and Eglinton, $54 @ $55.

Bar.—Refined from store is in but moderate request, and though prices are held steadily, they are scarcely so high, relatively, as the range of values abroad.

Old Rails.—There has been a fair demand for Old Rails at about the former range of prices. Sales 300 tons Double Head on private terms; 100 tons do. at $57; 300 tons do., at Philadelphia, at $57, and 1200 tons, also at Philadelphia, at $57·50, for shipment West. We quote Double Head at $57 @ $58, and T, $55 @ $56.

Rails.—New English are dull, and nominally quoted at $70@$72, gold, without reported transactions. American Rails are quiet and irregular, prices being quoted from $80 @ $85, currency.

Scrap.—There has been a good inquiry for No. 1 Wrought from yard, but the firmness of holders interferes with a free movement. Sales include 1000 tons at $55, for shipment East. Fair lots are generally held at $55 @ $57·50. There is not any stock offering from the wharf.

METALS.

Copper.—The demand for Lake Copper for immediate delivery continues light, and limited to the smallest quantities manufacturers can get along with until they begin to receive deliveries through their late heavy purchases, contracted for at decidedly lower prices than those now ruling. The production of the Lake Companies this year is expected to be considerably above that of 1872, when it was interfered with by the labor difficulties among the miners. The demand for contracts for summer delivery has been only fair the past week, and sales will reach about 400,000 lbs., generally sold on private terms. The cash sales foot up about 150,000 lbs. at 34½c. @ 35c., the low stock now here being controlled by a few strong parties, who keep the price well up. For June to October delivery the market is quoted at 32c. @ 32½c. English Copper has ruled firm, owing to cable advices of a rising market abroad, and sales generally have been at higher figures. We note about 250 tons, from 30c. early in the week, up to 30¾c. toward the close, stock now being held at 30¾c. @ 31c., for Best Selected. Manufactured Copper continues steady at former prices. We repeat quotations: 43c. for New Sheathing, 45c. for Bolts and Braziers, 27c. for Bronze and Yellow Metal Sheathing, and 32c. for Yellow Metal Bolts, net cash.

Tin.—There is scarcely any demand for Pig Tin, operators appearing disposed to hold off until the result of the Dutch sale becomes known. In the absence of demand the late high figures are scarcely sustained, though holders generally maintain a firm feeling at the inside figures given in our last review. We quote at 33½c. for Straits, 32½c. for English, and 38c. for Banca, all gold. The latest Singapore cable quotes at $36·75 per picul. The demand for Tin Plates has been limited, and toward the close has almost entirely fallen off, but as the stocks in dealers' hands are light, prices are held very strong. We quote: Charcoal Tin, $12·25 @ $12·50; Coke Tin, $10·50 @ $11; Charcoal Terne, $10·75 @ $11·25, and Coke Terne, $9 @ $10.

Lead.—There has been a fair demand for Pig Lead the past week at full prices. Advices from abroad indicate advancing markets, which has materially strengthened holders of both foreign and domestic. Sales include 600 tons at 6¾c. @ 6¾c., for ordinary foreign, and 6¾c. @ 6½c. for domestic, both gold; also a lot of 300 tons sold in bond for reshipment at 5c., gold. Manufactured Lead continues steady at 9½c. for Bar, 10½c. for Sheet and Pipe, and 16½c. for Tin-Lined Pipe, all less the usual discount to the trade.

Spelter and Zinc.—The market for foreign Spelter has become quiet, but prices are pretty well sustained, with moderate stocks. Sales 50 tons Silesian at 7¼c., gold, generally held at 7¾c. @ 7½c., gold. Domestic Spelter is also held pretty firmly, in sympathy with Foreign, at 9c. @ 11c., currency. Sheet Zinc is steady at the late advance, viz.: 10c., less 4 per cent., gold, from agents' hands, but without reported transactions.

Antimony.—Regulus continues quiet but steady at 14¾c. @ 15c., gold.

The following is the review of the metal market specially prepared for *The Iron Age* by Messrs. THOS. J. POPE & BRO.:

Trade is somewhat restricted by the disturbances of the money market, but as these are about passing away, and have, indeed, been caused more by the conflicts of cliques in Wall street than by any other cause, we may expect a great improvement in general trade. Gold, as we have so often predicted, has risen to high figures, yet it is likely to go still higher after May 1st, or before.

INGOT COPPER is quiet at 34c. to 34½c. for Lake, and 31c. for English. Lake Copper is weak and nominal.

PIG IRON.—American quiet but very firm. We quote No. 1 Extra, $50 to $51; 2 Extra, $47 to 48; Gray Forge, prime brands, $41 to $43.

LEAD is quiet after the recent movement, but prices are fully maintained, and must surely advance for ordinary and other brands. We quote Soft No. 1 Spanish, 6¾c., gold. Some holders have withdrawn from the market. None except corrodable for absolute orders is now on the way here; and common Leads not having been ordered this season, are bought up for European account at prices equivalent to 7c. and 7¼c., gold, duty paid here.

SPELTER, quiet and strong, 7¾c. to 8c., gold.

TIN.—The Dutch sale at 85 florins is about as it was expected. The article here is quiet, and buyers are waiting the action of the Dutch sales on general markets.

ANTIMONY, dull, 14¾c. to 15c. gold.

PHILADELPHIA.

Messrs. BLAKISTON & COX, 333 Walnut St., under date of March 29, write as follows: *American Pig.*—As is characteristic of the market elsewhere, this market has been quiet. Would-be buyers speak of the large stocks held on the furnace banks, in both the Lehigh and Schuylkill valleys, with a view to speculation, as being indicative of a fall in price and a weakness of the market in the early future, caused by the anxiety of holders to realize. There is an accumulation of the winter's production at many of the furnaces, as is the case always at the beginning of each year. This accumulation is all *sold*, the buyers of same preferring to wait until opening of canal navigation rather than meet the expense of freighting by railroad. As soon as the canals are in working order the banks will rapidly become bare, and there will be that scarcity which many, who are well posted, predict. We know of no lots of any extent being held in this city with a view to speculation, as was the case last year. The predicted scarcity this year will be due to the fact that the supply is not equal to the demand. Sales have been made of No. 1 Crane, 100 ton lots, at $51, on wharf, and sales of Gray Forge, Lehigh brand, 3000 tons on private terms. We quote: No. 1 Foundry, $49 to $51; No. 2 Foundry, $47 to $49, on wharf. Gray Forge, $39 to $41; and White and Mottled, $33 to $35, at furnace. *Scotch Pig.*—The stocks are light, and prices are firm. Eglinton, at $54; Glengarnock, $56, in yard. *Scrap* is in good demand, but there is little in store, and is held firmly at $56 for No. 1 Wrought.

PITTSBURGH.

MARCH 29.—There has been some fine weather during the past week, and business generally, as might be expected, was greatly benefited in consequence, but to-day it is wet and very disagreeable; the streets are in bad condition, and the country roads are reported as being almost impassable. The money market continues to work very close, and there is a very general complaint of great difficulty in making collections. It is much easier to sell goods than it is to get the pay for them afterward; hence there is not the same effort being made to obtain orders that there has been in former years, though, as a matter of course, the demand for almost everything is considerably curtailed in consequence, as jobbers generally are pursuing what is familiarly known as "the hand-to-mouth policy," carrying just as little stock as they can possibly help. However, hopes are entertained that money will ease up next month, and this, together with fine weather, would be of incalculable value here to trade generally. The winter, which has just closed, was a very severe and protracted one, not only here but all over the country, and business generally, particularly in manufacturing circles, was unusually dull. There is a better feeling in the Iron trade, and notwithstanding some manufacturers have been feeling very much discouraged recently, because trade was backward and unsatisfactory, the indications are that business will be up to an average yet before July 1st. The dark clouds that in the imagination of some operators were hanging over us, seem to be breaking up and disappearing, and, as already intimated, the outlook is more encouraging. There is a steady demand for Finished Irons of all descriptions; orders are coming in freely from all directions, and, as noted in my last, some of the mills are not inclined to sell very largely ahead at present prices. The card rate is four and six-tenths cents per pound, but the selling rate has been four cents. Some firms, it is said, are refusing to accept now less than four cents, cash. Nails are also moving freely, the recent advance having had no effect apparently in cutting down orders. The mills are all in full blast and prices are firmly adhered to—$5·25, 60 days; $5, net cash. There is a continued steady demand for Pig Iron, and the market is generally reported firm, especially for good irons, but there is no quotable change in prices, as compared with last week. Quotations may be fairly given as follows: No. 1 Foundry, $45 to $48, 4 mos.; No. 2, $42 to $44; Gray Forge neutral, $40 to $41; Cold Short, $38 to $39; Red Short, $43 to $45. There was a sale of this latter description at $44·50, and as it is scarce and more sought after than any other kind, it is held with considerable tenacity. Producers feel that they have nothing to lose by holding back, claiming that the supply is not equal to the demand, and that prices must go higher. Warm Blast Charcoal, $55 to $58; Cold Blast, $60 to $65; Car Wheel, $70. There is a continued fair demand for Steel, and while orders are not coming in quite so freely, the mills are all busy. Some of them are reported as being sold from 30 to 60 days ahead. There is no change in prices, and the demand is still confined mainly to the finer grades. The window glass manufacturers had a meeting this week, and while the necessity of an advance in prices was generally conceded, it was deemed inexpedient to make any change in the card for the present. 50 and 10 is generally regarded as the ruling discount for round lots, but it is alleged that sales have been made at 60, straight. However, from all that I can learn, there is no disposition now to make concessions in order to effect sales. Trade for all kinds of heavy Castings is reported brisk, and prices are firm in sympathy with the raw material. Most of the large foundries, it is said, have orders enough booked to keep them going all summer. There is an improved demand for light Hardware, and the indications are regarded as being favorable for a good trade all spring and summer. The Jones & Nimick Manufacturing Co. have advanced the discount on Locks from 25 to 35@7½. Pittsburgh Novelty Works quote at 40, straight.

Mr. James Frazier, for many years connected with the firm of Nimick & Co., died at his residence in Allegheny, on Friday evening, aged 52 years. Mr. Frazier, in his time, was considered one of the most reliable and best informed commission men in the Pig Iron business, and aided largely in building up the trade in Pittsburgh. He had been an invalid for several years.

Mr. James McCully, an old Pittsburgh merchant, died on Wednesday last, aged 75 years. Deceased was never married, and leaves an estate worth some $2,000,000, to be divided among his heirs, seven in number.

The Pittsburgh *Commercial*, of March 29, reports the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

400 tons gray forge red short	$43 00—4 mos.
250 tons gray forge red short	43 50—4 mos.
200 tons extra gray forge	40 00—cash
200 tons gray forge neutral	40 00—4 mos.
150 tons gray forge red short	40 50—4 mos.
150 tons gray forge mottled red short	40 00—4 mos.
100 tons gray forge red short	43 00—4 mos.
100 tons gray forge red short	43 00—4 mos.
50 tons white and mottled	40 00—4 mos.
100 tons gray forge	40 00—4 mos.

ANTHRACITE.

400 tons extra gray forge	$42 00—4 mos.
200 tons No. 3 cold short	38 00—4 mos.
193 tons gray forge neutral	41 50—4 mos.
120 tons gray forge neutral	40 00—60 days
100 tons gray forge neutral	41 00—4 mos.
100 tons gray forge neutral	41 00—4 mos.
100 tons close gray red short	43 00—4 mos.
50 tons No. 2 foundry	42 00—4 mos.
50 tons No. 2 foundry	42 50—4 mos.
40 tons No. 1 foundry	46 00—4 mos.
100 tons gray forge	37 50—cash.
100 tons gray forge	39 00—4 mos.

PITTSBURGH COKE.

200 tons gray neutral	$39 00—4 mos.

ALLEGHENY COKE.

500 tons gray forge	p. t.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, corner of South Charles and Lombard streets, report us the following prices, under date of April 1, 1873: Trade still rules comparatively quiet for this season of the year, and quotation figures better adhered to than for some time past, though good orders will induce some underselling. Money matters are very tight, and collections made with difficulty, causing mill rates to be shaded to desirable customers, though buying and selling figures being about one and the same.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick	4¼c. to 4¼c. per lb.
1 to 4½ wide by 1½ to 2 thick	¼
Round and square, ordinary sizes, from ¾ to 2 inclusive	4½c. to 4¾c. "
Hoop Iron, 1½ wide and upward	5¾ to 6 c. per lb.
Band Iron, from 1¾ to 4 in. wide	5 to 5¼c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	5½ to 5¾c. "
Norway Nail Rods	8c. to 8¼c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	17c. "
Machinery Steel	12c. "
Cast Spring Steel	11c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs	$6·25
" Mule Shoes " " "	7·25

Common Horse Nails, from 11c. to 18c per pound.

10	9	8	7	6	
23	24	25	26	28c.	per lb

Putnam Horse Nails..23 24 25 26 28c. per lb
R. R. Spikes.....5¾ by 9-16 at 5¼c per lb.

CINCINNATI.

Messrs. ADDY, HULL & CO., under date of March 31, write us as follows: *Pig Iron*—The market for week ending to-day has been moderately active. Transactions, however, were not large. Forge Irons have been in better request. Low grade Foundry Irons, though freely offered, are not wanted by buyers. For best grades of Foundry there is a fair demand, but the extreme scarcity of desirable Hanging Rock brands limits the business. For the higher grades of Car Wheel Iron there is still an active inquiry, but as yet there is no change in the supply, which is very light.

HOT BLAST CHARCOAL.

Hanging Rock No. 1	₱ ton	$55·00 @ 56·00—4 mos.
" " No. 2		53·00 @ 54·00—4 mos.
" " Forge		45·00 @ 46·00—4 mos.
Tennessee No. 1		54·00 @ 55·00—4 mos.
" Forge		44·00 @ 45·00—4 mos.
Alabama No. 1		55·00 @ 57·00—4 mos.
Missouri No. 1		55·00 @ 57·00—4 mos.
" No. 2		53·00 @ 54·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1	₱ ton	$55·00 @ 56·00—4 mos.
" Forge		43·00 @ 44·00—4 mos.
Ohio No. 1		53·00 @ 55·00—4 mos.
" Forge		40·00 @ 43·00—4 mos.
Scotch Pig, No. 1		56·00 @ 57·00—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel	₱ tn.	$60·00 @ 65·00—4 mos.
Missouri " "		60·00 @ 62·00—4 mos.
Kentucky " "		58·00 @ 60·00—4 mos.
Tennessee " "		58·00 @ 60·00—4 mos.
Georgia " "		60·00 @ 63·00—4 mos.
Alabama " "		60·00 @ 63·00—4 mos.
Machinery and Forge		58·00 @ 60·00—4 mos.
Blooms		112·00 @ 116·00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of March 31, writes us as follows: The market for Iron is firm, with a moderate demand. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores		$55·00 @ 56·00
" 2 " " " "		53·00 @ 54·00
" 1 Forge, " " "		45·00 @ 47·00
" 1 F'dry, from Tennessee Ores		54·00 @ 55·00
" 2 " " "		52·00 @ 53·00
" 1 Forge, " " "		45·00 @ 47·00
" 1 F'dry, from Alabama Ores		56·00 @ 57·00
1 " " Iron Mountain Ores		55·00 @ 60·00

HOT BLAST STONE COAL.

No. 1 F'dry, from Missouri Ores		54·00 @ 55·00
" 2 " " " "		52·00 @ 53·00
" 1 Forge, " " "		44·00 @ 45·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores		60·00 @ 65·00
" " Tennessee Ores		56·00 @ 58·00
" " Alabama Ores		60·00 @ 62·00
" " Georgia Ores		60·00 @ 62·00
" " Missouri Ores		58·00 @ 60·00
" " Kentucky		58·00 @ 60·00

FOREIGN.

GREAT BRITAIN.

Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of March 17, 1873, report:

Metals.—The past week has been marked by some large transactions in Tin at advanced prices, and rates for other descriptions of metals evince a hardening tendency. For Scotch Pig Iron the demand is still good, and a further diminution has been made in the Warrant Store at Glasgow, which on the 7th instant stood at 84,478 tons, against 340,498 tons at the same date in 1872. The shipments for the present year, made up to the 8th instant, amount to 101,615 tons. The sale of Middlesborough Pig Iron is limited by the inability of smelters to accept any further orders for prompt delivery. Another advance has been made in the price of Manufactured Iron, and makers of first-class brands in South Staffordshire now require £16 to £16. 10/ for Bars, and quote subject to approval of specifications. For Sheets, special rates only are obtainable. There is not much doing in Copper, and transactions are taking place considerably under smelters' lists. The West Coast charters for the first fortnight of February are cabled as 600 tons, which is likely to have an improving effect on prices. The Dutch sale of Tin is fixed for the 2d April next, and only 75,200 slabs will be offered; this has caused considerable excitement here, and quotations have responded by a quick advance. Sales of Straits to a large amount have taken place within the last few days. English smelters have advanced their prices £4 per ton. Extreme rates are required for Lead and Spelter, and it is not unlikely that higher prices may soon be obtainable.

IRON.—"Ayresome" Yorkshire Pig Iron, nominal, No. 1, 129 6; No. 2, 124 6; No. 3, 122/; No. 4 (Foundry), 121/; No. 4 (Forge), 121 net cash, or 2/ extra 4 months' bills. Scotch Pig Warrants, 136 6 to 137 6. Staffordshire Bars, £15 to £16. 10/. Hoop Iron, £15. 10 to £17. Gas Tubes, 25 per cent. off new list. Boiler Tubes, 10 per cent. premium.

COPPER.—Nominal. English Tough Ingot, £93 to £94. Chili Bars, £85. 10/ to £86.

TIN.—English Ingot, £150 to £151. Straits, £148. 10/ to £149.

TIN PLATES.—Best Coke, I. C., 38/ to 40/; Charcoal, I. C., 43/ to 45/ per box.

LEAD.—Best English Soft Pig, £23. 5/ to £23. 10/ Refined Red Lead, £25 to £27.

ANTIMONY.—French Star, £62 to £64.

SPELTER.—Silesian, special brands, £27. 10/ to £28. English, best brands, £28.

Result of the Dutch Tin Sale.

(*Private Telegram Communicated to The Iron Age.*)

AMSTERDAM, April 2, 1873.—The Dutch Trading Company's Banca Tin sale averaged to-day 85 guilders, equal to £145, London price. This is a decline of from two to three guilders since the 15th ult.

Latest Hamburg Metal Market.

Translated for The Iron Age from the Borsenhalle.

HAMBURG, March 14, 1873.—*Lead* is fully sustained, German at 23 to 24 marks, English at 24, Spanish, of Rein & Co., at 24⅛. *Copper* inanimate, although well sustained; Northern sorts at 97 to 106. *Tin* shows a rising tendency; Banca, 1·65 to 1·67; English, 1·55 to 1·57; rods, 1·60 to 1·62. *Spelter.*—The market continues lively and the sales again run up 9500 cwts., at partially enhanced rates. The following prices have been paid to-day: Silesian union, "futures," 26·50 marks; delivery by rail, 27·20, and common brands, "futures," 26·80.

Charles Thorel & Co.'s Japanese Metal Review.

(*Condensed for The Iron Age.*)

YOKOHAMA, Feb. 8, 1873.—*Metals*—With the exception of an inquiry for Lead for export to China, there has been little doing in metals. We quote *Iron* (flat and round), $4 to $4·70 per picul. *Nail Rod*—$3·60 to $4·80. *Pig Iron*—Nominal at $1·25 to $1·30, and *Iron Wire* $9 to $10. *Lead*—5·75 to $6·25 per picul. Deliveries to consumption, 140 piculs of Iron and 900 of Lead; re-export of the latter, 1600 piculs. Stock of Iron, 7980 piculs, and of Lead, 639. *Exchange*—4 5⅛ to 4 5⅝.

Antwerp Metal Market.

(*Translated for The Iron Age from the Revue Commerciale et Maritime.*)

ANTWERP, March 14, 1873.—*Metals*—The market continues quiet, owing to the insufficient supply at this center. The arrivals have been 3349 tons of Pig Iron, 40 pigs Lead, 82 slabs Tin, and 17,392 ingots Copper from England.

The Charleroi (Belgium) Metal Market.

(*Translated for The Iron Age from the Frankfurter Zeitung.*)

CHARLEROI, March 9, 1873.—*Iron*—As had been foreseen by most people, ourselves included, Wrought Iron has risen to 33 francs. *Pig Iron* varies between 18 and 19 francs, without much anxiety to sell at this figure. *Plates* sell with ease at 45 francs for No. 2. To the many circumstances favoring high prices for coal, a decrease of production in this neighborhood is added. Operatives are leaving the coal mines in great numbers in order to devote themselves to other pursuits, brought about by the advent of spring, in kindred branches of industry. The consequence is that the proprietors of coal mines in this vicinity proceed with the greatest hesitation in contracts for the delivery of coal, both with respect to quantity and time of delivery.

Latest Batavia Metal and Coal Report.

(*Extracted for The Iron Age from Dunmler & Co.'s Review, via San Francisco.*)

BATAVIA, (Java), Feb. 5, 1873.—Of imports, the demand for all descript ons of *Iron* is very quiet, and we can only repeat our last quotations. Other articles are unchanged. Of exports, we have to mention that the sale of 8052 piculs Billiton *Tin*, held on the 3rd instant, averaged 87·98 guilders per picul. The next sale, of about 8000 piculs, will be held on Monday, the 7th April.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending April 1, 1873:

Hardware.

Alburtus G. W.
Chains, cks., 9
Casks, 1
Cases, 1
Bryce & Co.
Arms, cases, 10
Boker Hermann & Co.
Arms, cases, 9
Chains, cks., 54
Casks, 10
Bruce & Cook,
Wire, bdls., 19
Booth & Co.
Casks, 35
Barton, Alexander & Waller,
Wire, cks., 7
Barstow E. W.
Chains, 21
Anchors, 9
Beam & Murray,
Anvils, 150
Vises, cks., 2
Banke & Rust,
Cases, 3
Cockayne J. W.
Casks, 1
Dickinson Henry
Casks, 6
Demuthe Wm. & Co.
Cases, 5
Dodge W. H. & Co.
Cases, 2
Dreyfuss Bros. & Weiller
Cases, 4
Ehrmann J. & Co.
Cases, 7
Field A. & Co.
Chains, cks., 53
Field, Leiter & Co.
Cases, 9
Hilger & Sons,
Cases, 14
Hugill Chas.
Casks, 1
Hayden & Tompkins,
Packages, 3
Irving Edgar,
Arms, cases, 1
Per. caps, cases, 1
King H. & J. W.
Packages, 4
Lau & Garlichs,
Arms, cases, 12
Mdse. pkgs., 1
Lamarche H.
Cases, 17
Moore's J. P. Sons,
Arms, cases, 7
Merchants Dispatch Co.
Arms, cases, 6
Guns, cases, 6
Mason John W.
Wire rope, coils, 5
Moss F. W.
Files, cks., 6
Orgill Jos.
Chains, 45; cks., 42
Page E. & Co.
Wire rods, coils, 2647
Russell & Erwin Mfg. Co.
Files, cks., 4
Skinner J. A. & Co.
Cases, 5
Schoverling & Daly,
Arms, cases, 12
Mdse. pkgs., 4
Stratton J. F.
Cases, 9
Van Nest A. R. & Co.
Casks, 2
Van Wart & McCoy
Mdse. pkgs., 88
Casks, 4
Chains, cks., 13
Cases, 2
Witte John G. & Bro.
Mdse. pkgs., 33
Windmuller L. & Roelker,
Guns, cases, 14
Wiebusch F.
Mdse. pkgs., 5
Ward Asline,
Mdse. pkgs., 5
Zuin Chas. & Co.
Cases, 8
Order.
Casks, 1

Iron.

Brown Bros. & Co.
Rods, bdls., 416
Congreve Chas. & Son,
Fish plates, bdls., 450
Rails, 820
Griswold J. A. & Co.
Pig, tons, 70
Henderson Bros.
Pig, tons, 550
Holdane, Hopkins & Stokes,
Bars, 3154
Hopkins Sam'l,
Bars, 1111; bdls., 56
Scroll, bdls., 64
Kidder, Peabody & Co.
Scrap, tons, 76
Lang W. Bailey & Co.
Bars, 689
Bundles, 330
Milliken S. Jr.,
Tubes, bdls., 441
Morrill Jos.
Scrap, tons, 4
Naylor & Co.
Fish plates, bdls, 696
Oothout Wm.
Bars, 4626
Hoop, bdls., 1000
Oelrichs & Co.
Casks, 196
Piersons & Co.
Bundles, 147
Phelps, Dodge & Co.
Bundles, 140
Page E. & Co.
Bar, tons, 54
Perter en N.
Scrap, lbs., 2790
Roche Bros. & Co.
Scrap, lbs., 3535
Van Wart & McCoy,
Bundles, 400
Whitney A. R.
Bars, 988
Wessels, Geo.
Scrap, lbs., 5469
Order
Sheet, bdls., 1895
R. R. tons, 100; bars, 14,894
Scrap tons, 101; bxs., 850
Fish plates, 350
Rails, 907
Bars, 4341
Pig, tons, 320
Old rails, tons, 50; pcs., 134
Bundles, 100
Hoop, bdls., 284
Rods, bdls., 290
Speigel, tons, 61½

Steel.

Cockayne J. W.
Bundles, 143
Disston H. & Son,
Mdse. pkgs., 5
Lang W. Bailey & Co.
Blooms, 66
Bundles, 208
Moss F. W.
Bundles, 117
Cases, 5
Casks, 1
Naylor & Co.
Bundles, 327
Tires, 54
Plates, cases, 1
Perkins, Livingston & Post,
Bessemer rails, 515
Sanderson Geo. & Co.
Bundles, 64
Cases, 5
Casks, 4
Selegman J. & W. & Co.
Bessemer rails, 654
Slagg Joseph,
Mdse. pkgs., 19
Cases, 3
Vose, Dinsmore & Co.
Bundles, 102
Cases, 11
Van Wart & McCoy.
Bundles, 16
Order.
Rails, 2158
Bessemer rails, 403
Bundles, 578

Metals.

Brown Bros. & Co.
Plumbago, bbls., 1965
Bruce & Cook,
Tin plates, bxs., 1499
Coe & Co.
Scrap, brass, bbls., 91
Figuera J.
Lead, pigs, 4220
Harley Geo.
Scrap, pkgs., 35
Lamarche H.
Zinc, cases, 6
Middleton & Co.
Scrap, tons, 65
McKinney Dan'l,
Plumbago, cases, 1
Naylor & Co.
Tin plates, bxs., 1509
Phelps, Dodge & Co.
Zinc, cks., 150
Tin plates, bxs., 11,715
Tin, ingots, 596
Roche Bros. & Co.
Scrap copper, lbs., 145
Scrap brass, lbs., 897
Scrap lead, lbs., 1365
Taylor D. & Sons,
Plumbago, bbls., 40
Order.
Lead, pigs, 6684
Tin plates, bxs., 7938
Copper, bars, 37
Ingot copper, cks., 32

Our English Letter.

Review of the British Iron, Hardware and Metal Trades.

(*From our Special Correspondent.*)

SHEFFIELD, ENG., March 18, 1873.

Now-a-days it requires no common amount of courage, no little indifference as to results, and not a small modicum of dexterity to talk to that modern incubation, the pattern "workingman," in a fraternal manner. Few public men in this country *dare* assume the right to catechise or advise an assemblage of workingmen, most of whom may be classed amongst trades unionists, against the well-known tenets and every-day practice of such an assemblage in its individual or distinctive capacity, and fewer still would have dared, as Mr. Roebuck did at Sheffield last week, to stigmatize their trade union leaders as "mischievous demagogues." Mr. Roebuck is the only public man of any note who has dared to put a commonly received notion (amongst the middle and upper classes at any rate) into a few pithy, pointed phrases. He is not at present a member of the British House of Commons, it is true, but his opinion is always welcomed by the general public of the country at large, which regards him, as he truly is, as the one man in Great Britain who *dare* say what he thinks is right, irrespective of party or politics or creed, even if he should—as he did some two or three years back—offend the "powers that be." He said in effect to the workingmen and others who listened to him, "you are very good well meaning men, and you are worthy of all credit for the manner in which you support your Foresters clubs and other provident institutions—far more worthy than the wealthy men who give their guineas—but you are, with all your forethought and forbearance, somewhat simple, and a lot of peripatetic demagogues prey upon your simplicity." This was to the point and, you may take my word for it, these plain truths fell flat—the audience were not enthusiastic over them. On the contrary, there was an excess of silence. Then he referred to South Wales, and instanced the widespread misery, the grim desolation, the *famine*, that there prevails, mainly owing to the mischief making demagogues." He advised them to be friendly to and with capital, urged them to look upon it as an ally, and not as an enemy, as they were taught to do by the demagogues aforesaid. That, you will admit, was pretty pungent to a Sheffield audience, seeing that this is the very hotbed of trades unionism. The speech has, I may say, touched the too susceptible natures of the trades union leaders to the very quick, and they are roundly rating Mr. Roebuck in not very measured terms, beside having called a public meeting to protest against his speech, at which meeting he is invited to be present. As a question of *policy*, Mr. Roebuck's friends must deplore his speech, seeing that it is intended to put him up again for Sheffield at the ensuing general election; but as a word in season to the working agitators, and to the men generally, it must be accepted as one of the finest specimens of disinterested self-sacrifice for the public good on record. He must have known that he was risking political suicide—yet he spoke, and although he is not one of the smoothest of speakers when a certain class of Americans are in question, one cannot help but wish him success.

One thing, at least, is becoming day by day more certain, and that is, that the only way for Great Britain to retain her present—I suppose I must still say *present*—manufacturing supremacy is for the capitalists and employers of labor to form, maintain and consolidate an associated resistance to the trades unions. This, as I have said in other communications, is already in its preliminary stages, and will, if certain difficulties can be surmounted, be pushed on to the perfection of a first-class and formidable combination. An ably conducted London paper (*Iron*) says, in speaking of the relation between capital and labor: "Of what value to themselves, or to any one else, would be the labor of the men, but for the assistance which it derives from capital? Who sunk the pits from which the coal and iron are extracted? Who built the enormous works in which the iron is smelted and the metal is carried through all the early processes of its manufacture? Who but the capitalist? The earth may teem with minerals, but they are useless to society until capital is called into activity." Very true, in the sense intended by the writer, but he might go further and say this: Labor cannot exist without capital, but capital can live without labor—and why? Because labor is the only resource of the men, but the capitalist can take their money anywhere, invest it abroad, in any sort of foreign security or enterprise. Deplorable, indeed, would the condition of this or any other country be, were the war between man and master to be waged to an extremity so bitter and remorseless as that indicated, yet, as I have said, capital needs protection, inasmuch as labor protects itself by combination. Let it not be imagined for one moment that I desire to write one syllable against labor as such—nor would any other man, I opine, who comprehends the true dignity and the solid worth of honest industry. The workingman who, by unremitting toil and continuous efforts, lives honestly and makes himself a decent, respectable member of society, is entitled to all respect—to as much admiration as the successful man of letters, or the leading members of high society. *That* is, the true republic, not equality of social position, but the honest and equal recognition of other men's industry.

If we turn to South Wales, we find Mr. Halliday, the leading "demagogue" of the associated miners, stirring up the drooping spirits of the miners on strike, some of whom begin to look upon the dispute as a matter of absolute starvation if they remain faithful to the union, by various argumentative spurs. He is reported to have said last week, in Wales, "I hold the keys of the South Wales collieries in my pocket, and no one shall unlock them but *me!* Would you call *that* mischief making, in America? Is *that* an assertion of the true, and proper dignity of labor? By no means, the South Wales masters say, and so I think would your merchants, were some fiery demagogue to hurl himself into their offices and incite their clerks to instant and sustained insubordination. It is, however, more than a little consolatory to find that there are a great number of iron workers and others in the district named with a preference for half or three parts of a loaf, rather than have no bread at all. So far, work has been resumed at Blaina, Ebbw Vale, Tredegar, partly at Dowlais, and at Cyrfarthfa repairs are going on preparatory to the resumption of work. These repairs are necessarily on a very large scale. In some of the blast furnaces the bottoms are being blown up, ten or twelve feet of iron and limestone having accumulated in a solid mass during the thirty years that have elapsed since they were last cleared out. In a few cases that rare metal, *titanium*, has been thus found in small quantities. At Ebbw Vale the alterations and repairs will take six weeks, as some of the furnaces have to be rebricked at a cost of about £150 each. In addition to those named, hopes are entertained that the men will turn in at Rhymney, Abernant, and Treforest, on the Dowlais terms. In the Dudley district of Warwickshire, the thick and thin coal miners (you will understand, I may as well explain, that I refer to the seams of coal worked, not to the physical structure of the men), have given notice for an advance of one shilling per day to the Leeds and district engineers—mechanical and otherwise—demand payment

at the rate of "time and a quarter" for the first wo hours overtime and "time and a half" for very hour afterward—which the employers decline to grant, although there are some 15,000 men affected, or rather disaffected; the West Cumberland miners ask for an extra 20 per cent.; the South and West Yorkshire colliers remain firm to their resolve not to accept less than 20 per cent. raise; the Cleveland iron stone miners give notice for 10 per cent. extra; the Sheffie' fire iron makers have struck for 20 per cent. additional; the Sheffield wood turners are out on strike; the Birmingham railway pointsmen want three shillings per week advance, and a day and a half's pay for Sundays; the Holmfirth colliers are out on strike; the Rotterham brass workers say they *will* strike for 20 per cent. more, and the men—masons, carpenters and joiners, and bricklayers—in the building trade of London demand one half penny per hour extra, which the masters say they cannot concede, consequently when the notice expires, in July next, a strike appears likely to take place. So much for the labor question. The other "question"—that of coal—I shall not this week touch, further than to state that in some few districts prices are going up a little, but, generally speaking, are not higher, the supply being little below the demand for general purposes, although in specific cases great inconvenience is experienced from the scanty supply. The iron market proper—to begin with the land o' cakes—is quietly active, although the "bears," who have been "on the rampage" at Glasgow, have made vigorous efforts to bring down the price of warrants. They have succeeded in a slight degree, having lowered the quotations about 5 ', or, practically, rather more. This effect, it should be said, is also owing to an increased production consequent upon the blowing in of more furnaces. In Connels a further reduction has taken place, their total being now about 83,000 tons. Shipments for the week show a decrease of 5000 tons, being only 12,000 tons as against 17,000 in the corresponding week of last year. The annexed table—for which I am indebted to a metropolitan trade paper—shows the exports of Scotch pig iron comparatively:

Week ending	Foreign. 1873.	Foreign. 1872.	Coastwise. 1873.	Coastwise. 1872.	Weekly totals. 1873.	Weekly totals. 1872.
Jan. 4...	9,238	10,023	7,343	9,996	16,581	20,019
" 11...	6,190	5,542	4,899	4,475	11,089	10,017
" 18...	5,551	4,414	3,719	4,473	9,270	8,887
" 25...	6,875	6,234	4,176	5,836	11,055	12,070
Feb. 1...	5,646	7,111	3,024	3,092	8,670	10,203
" 8...	5,493	7,130	5,044	6,070	10,537	13,200
" 15...	4,380	7,208	3,670	4,870	8,050	12,078
" 22...	7,757	7,940	4,555	6,448	12,312	14,388
Mar. 1...	7,144	11,237	5,000	5,714	12,144	16,951
" 8...	8,026	10,498	4,398	7,334	12,424	17,832
Total...	66,304	77,337	45,828	58,308	112,132	135,645

Last week 8850 tons of coal were shipped to foreign ports from Scotland, and 18,700 tons coastwise—a total of 27,500 tons, as against 33,845 in the same week of 1872. The leading brands of Scotch pig are somewhat irregularly quoted, but many of the figures exhibit a reduction, as will be seen: Coltness No. 1, 165/; No. 3, 142/6; Gartsherrie No. 1, 165/; No. 3, 140/; Summerlee No. 1, 165/; No. 3, 140/; Carnbroe No. 1, 152/6., No. 3, 140/; Langloan No. 1, 165/, No. 3, 140/; Calder No. 1, 165/, No. 3, 140/; Glengarnock No. 1, 152/6., No. 3, 140/; Eglinton No. 1, 140/, No. 3, 137/6.; Dalmellington No. 1, 142/6., No. 3, 140/; Carron No. 1, 165/; Shotts, No. 1, 160/, No. 3, 140/, and Kinneil No. 1, 154/, No. 3, 140/. All these prices are likely to be at once succeeded by lower ones. The malleable iron trade is still quiet, but machinists and engineers are in full work. In the Cleveland (Middlesboro, &c.) *locale* prices are pretty nearly stationary, which fact is of itself a promising sign. No. 3 pig is to be had at an average of £6 per ton. There are now 128 furnaces in blast in the North of England out of a total of 135, and there are 22 others in course of erection, the bulk of them in the Stockton and Middlesboro neighborhood. Manufactured iron is in fair request at the following rates; bars, £12. 10/ to £15; ship plates, £13. 10/ to £14; boiler plates, £15. 10/ to £16; angle and bulb iron, £13. 10/ to £14; cable iron, £13. 10/ to £14; rivet iron, £13 to £14; puddled bars, £9 to £9 5/; hoops, £15. 10/ to £16; rails, £12 to £13. 10/; sheets, £17 to £17. 10/, and spikes £17 to £20. In West and South Yorkshire the whole of the iron works are fully employed, chiefly, however, on old orders. Present prices are too high to admit of a healthy and steady demand, and in all probability work will to some extent fall off and so bring down prices here as elsewhere before any large number of new orders can be expected. The engineering and foundry establishments at Bradford, Leeds, Sheffield, and in South Yorkshire generally, are very busy—partly on account of foreign and colonial orders and partly on work rendered necessary by the recent immense extensions and new enterprises in the iron, steel and coal trades. All the large Sheffield firms are fully engaged. I hear that Charles Cammell & Co. (limited), are rolling the armor plates for the great Russian iron clad *Peter the Great*, and also understand that Jno. Brown & Co. (limited) have some heavy orders on hand in the same department, in addition to which both firms are producing enormous quantities of steel rails, tires, Bessemer steel, buffers, springs, files and other general and special work. These two firms (whose works adjoin) alone employ some 11,000 men just at present, and are both constantly extending their means of production. The edge tool, file and saw trades are brisk. Silver platers are in receipt of good orders, and one leading house has this week thought fit to raise prices. The cutlery trades are doing a moderately good business. I understand some of the chief factors have already received some good spring orders from the States. With Germany and France a fair business is done here in common and medium stag and horn handles, but in best hafts they can beat us hollow. The penknife and pocket-knife cutlers are obtaining the advance they require, which averages about 5 per cent., and the scissors grinders are determined to obtain what they require—a considerable advance. The various Birmingham industries are, as a rule, fairly brisk—some of them being somewhat overburdened with work. Pig iron is, No. 1, 130/; No. 3, 122/6, and No. 4 forge, 110/. South Staffordshire bars are again higher, Earl Dudley's being £16. 12/6, and Messrs. Barrows, £16. Second class bars are still £15. 10/; single sheets, £21, with good demand; girder plates, £19; boiler plates, £20, and Shropshire wire iron, £18. 10/. The very old established iron works of John Bagnall & Sons, West Bromwich—founded 70 years ago—are about to be transferred to a company on the "limited liability" principle. Galvanized sheets are worth £25. 10/ per ton; tin plates, charcoal I. C., 40/; second quality, 39/6; coke I. C. best, 38/; second ditto, 36/ per box, f. o. b. Yellow metal sheathing is 9d. per lb. and brazier, ditto, (made for India) 8¾d. per lb. In the early part of last week tin was very flat, Straits being quoted £144, and Billiton £143; but on Wednesday a strong demand sprung up, and prices advanced £4. On Thursday the demand was less active, but steady, and cash transactions took place at £148, closing 10 weaker. About 150 tons for future delivery realized £149. English advanced £4, making ingots £150, bars £151, and refined £150 per ton. Copper dull, and rather weaker, at £85. For Lota bars, £85. 10/ for good ordinary, and £87 for best Chili brands. Wallaroo is £92 to £92. 10/. English is obtainable under official quotations. Regulus at Swansea is selling at 17/. Spelter continues firm at £27. 5/ to £27. 10/ for Silesian, WH. £28, and Rhenish £27. English is scarce, at £28 to £28. 10/ in Birmingham. On Thursday the Vieille Montagne Company advanced their prices of sheet zinc and nails £2 per ton.

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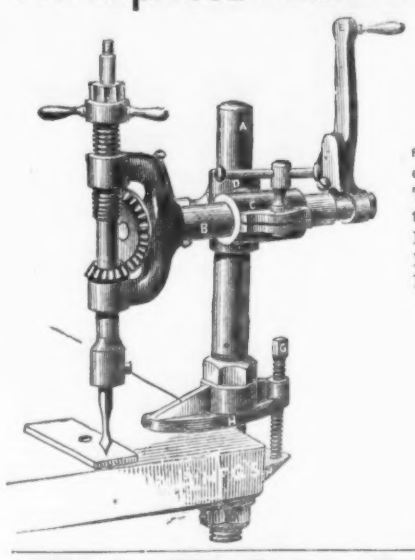

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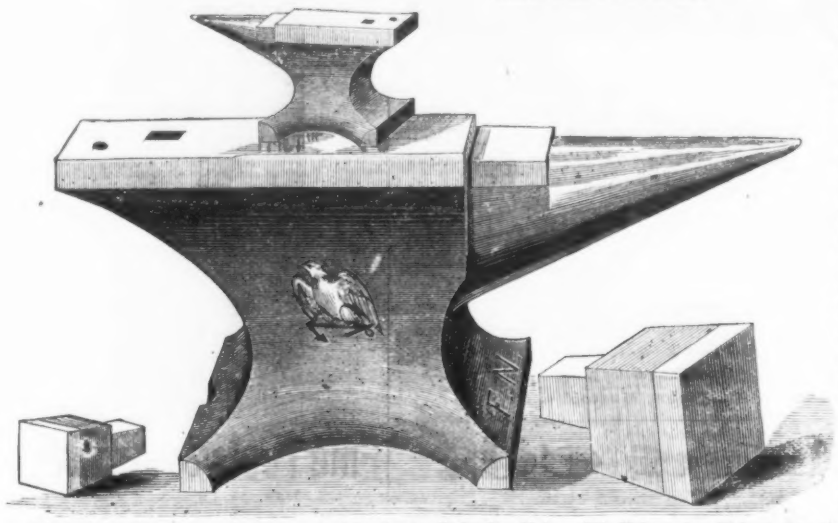

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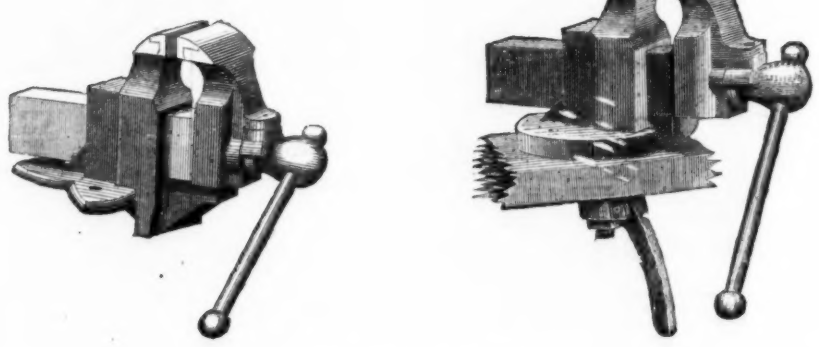

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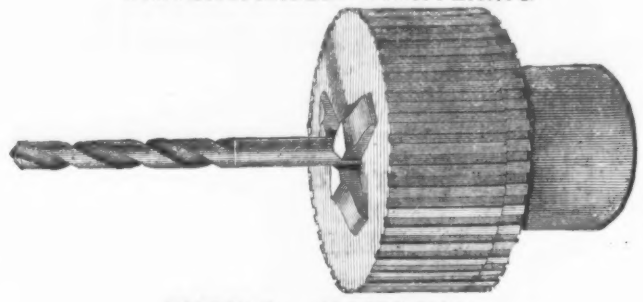
Sanseer Manufacturing Co.,	Porter Saw Co.,
Andrews Bros.,	Lewis Armstrong & Colwell.,
Warwick Tool Co.	Campbell & Co.

UNIVERSAL SELF-TIGHTENING



WARWICK TOOL CO.'S PATENT

DRILL CHUCK.

(Superior to all others, and the only practical Chuck.)

☞ All the motions in this Chuck are positive. It has no spring or complicated mechanism to break or get out of order. The Large Chuck is on the same principle precisely, and has an arrangement of the jaws for chucking small articles, for turning, boring, &c. The Small Chuck holds drills from ⅝ shank down. The Large, from ¾ down to 5-16. **Price—Small, $6·00. Large, 8·00.**

The Taylor Manufacturing Company, New Britain Conn.
Hardware Manufacturers. Send for Catalogue.

BUY THE BEST!!

Champion Ice Cream Freezers

With Condon's Patent Self Adjusting SCRAPER AND **Ice Agitator.**

CRANK,
3, 4, 6, 8 quart.

GEARED
3, 4, 6, 8, 10, 12 quar
16 20, 24, 32, 40 quar

RECOMMENDATION.

Messrs. SIDNEY SHEPARD & CO., Buffalo, N. Y.

Gentlemen: In reply to your inquiry, "How do you like our *Champion Freezer?*" would say, I have tried all the different kinds of freezers in the market, but found none to answer my wants, consequently I had one made at an expense of over two hundred dollars, that suits me. Your *Champion* embraces all the good qualities contained in my own, and I consider it the best I have seen. Yours, respectfully,

BUFFALO, Sept. 5th, 1872. J. MAYER, CONFECTIONER, No. 386 Main Street.

Samples, Illustrated Catalogue and Prices of our own Manufactures supplied on application.

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SOLID BOX VISES.

With or without Convex and Concave Washers.

Jackscrews, Braces, Coffee Mills, Turning Lathes; Clamp Heads and Screws; Parallel Bench Vises, Sash Pullies, Ho House Pullies, Composition Cocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Rivets, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and Genera Hardware.

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At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for the

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Hardware.

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Manufacturers of

Wrought Iron Butts, Strap and T Hinges,

PLATE AND HOOK HINGES,

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We always have on hand a full assortment of

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W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
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Hardware.

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PRATT & CO.
BUFFALO, N. Y.

MANUFACTURERS OF

BAR IRON, ANGLE IRON, PLATE IRON, SHAPE IRON, FORGED IRON
Railroad Fish Plates, Bolts & Spikes.
CUT NAILS, COLD CUTNUTS, CUT WASHERS, COACH SCREWS, HORSE NAILS
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WOOLWORTH HANDLE WORKS, *Axe, Pick and Sledge Handles, &c.*
SHELTON CO., *Tacks, Bed Screws, Carriage, Tire & Store Bolts, &c.*
D. H. GOODELL, *Lightning & Turn-Table Apple Parers, & Cherry Stoners.*
WOODS CUTLERY CO., *Hot Water Proof Table Cutlery.*

Elephant Axes and Tools, Hatchets, Picks, Mattocks, &c.

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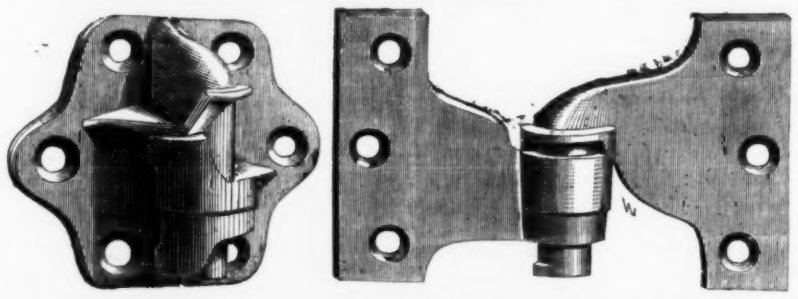

Surface. *Patented Nov. 3, 1868.* *Mortise.*

THE STRONGEST BLIND HINGES IN MARKET.

Upper and Lower Hinges are alike, locking the top and bottom of the Blinds.

On long Blinds three or more may be used without mismatching sets, and all will fasten. They cannot be broken or closed by the wind.

☞ We would call the attention of the trade to our **Improved Revisible Self-Closing Gate Hinges.** Also our **Improved Axle Pulleys, both Iron and Boxwood Wheel, Sash Locks, Sash Bolts, &c.**

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Send for Illustrated Catalogue and Price List

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FULL SIZE OF KEY.

Salesroom No. 1 Barclay New York.

FINE FLAT-KEYED LOCKS for all Purposes

RIM and MORTISE STORE DOOR LOCKS,

Heavy Front Door and Vestibule Locks.

Rim and Mortise Night Latches,

CLOSET, CHEST, DRAWER, DESK and PADLOCKS,

Post Office Lock Boxes and Prison Locks,

Leeds' Gate Fixtures, Field's Shutter Bars, etc., etc.

The Yale Lock Manufacturing Co.,
STAMFORD, CONN.

The Best TUMBLER LOCK Ever Made.

New Pattern Key. No. 500 Yale Lock.

Samples sent on Application

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SHANK AND SOCKET FIRMER CHISELS

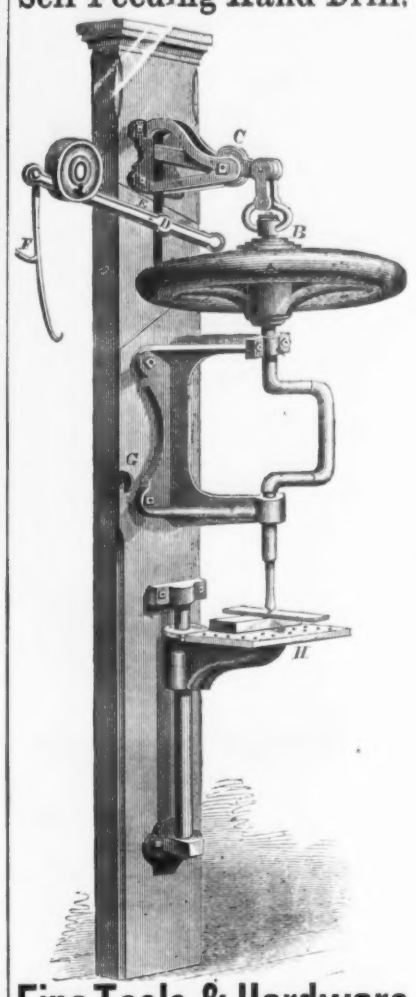
Also, BEST QUALITY SOCKET FRAMING CHISELS.

Hardware.

BIDDLE MANU'FG CO.

PATENT

Self Feeding Hand Drill.



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Warerooms,
78 Chambers Street, N. Y.
Send for catalogue.

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Tinners' Tools and Machines,
COFFEE MILLS,
CARRIAGE BOLTS,
Steelyards, Dividers, Compasses,
Coes Wrenches,
WROUGHT and MALLEABLE.
STEEL and IRON SQUARES.
And a large variety of

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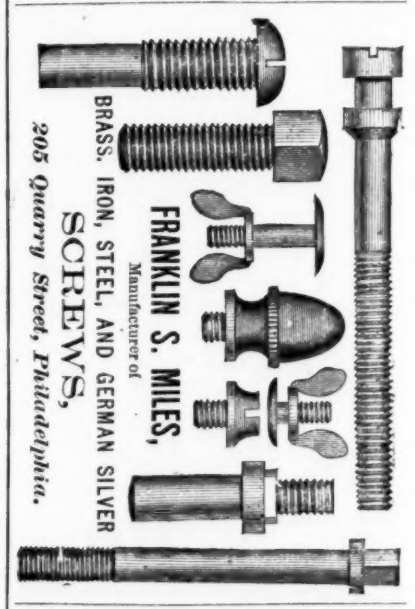
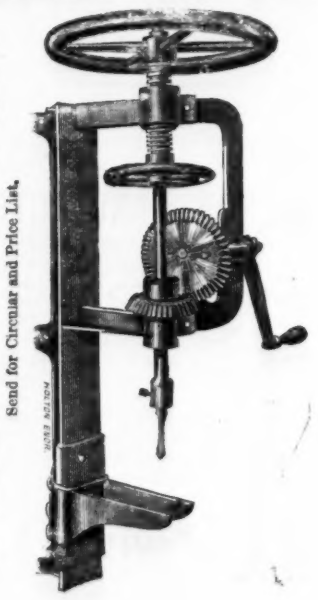


Blacksmiths' Hand Drill.



Manufactured by MORRELL & TIEBOUT,
Cor. of Grand & First Sts., Williamsburg, N. Y.
Send for Circular and Price List.

New York Wholesale Prices, April 2, 1873.

HARDWARE.

Anvils.

Solid Cast Steel ₱ lb
Wright's ₱ lb gold 12½c; over 250 lbs. 13c. gold
Armitage's Mouse Hole gold 12c
Wilkinson's ₱ lb gold 11½c
Eagle Anvil Co., ₱ lb 11 cts dis 15 @ 15&5 %

Apple Parers.

Turn Table, Lightning, Reading, Conqueror, Union } $8·50 per dozen.
Bay State, Paring Coring & Slicing 13 50 @ 15 00
Skeleton " " 8 00
Climax Slicer 9 00
Bay State Peach Parer 11 00 @ 11 50
Lightning Peach Parer 11 00 @ 11 50
Peach Stoner & Halver 6 00

Augers and Bits.

Snell Mfg. Co. dis 15 %
Russell Jennings dis 10 %
Douglass Mfg. Co., Extra dis 25 %
" " No. 1 dis 25&5 %
" " Hollow Augers dis 25&5 %
Cushman's Expanding Hollow Auger dis 20&10 %
Ives' dis 25 %
" Hollow Augers dis 25 %
" Expansive " dis 30 %
" Expansive Bits dis 30 %
Andrews' Bitts dis 25 %
Cook's Patent Augers dis 30 %
" " Bits dis 40 %
Shepardson's Double Cut Bits dis 25&10 %
Griswold's Patent dis 20 %
Cast Steel Cut Augers dis 20 %
Cast Steel Auger Bits new list dis 25&10 %
Long Augers dis 25&10 %
Bonney's Patent Hollow new list dis 30 %
Stearns' Patent Hollow $48 per doz.—dis 25 %
Morse's Bit Stock Drills $48 per doz.—dis 30 %

Axes.

Blood's dis 20%
Hunt's ₱ doz 15 00 @ 17 50 net @ dis 5 %
Collins' ₱ doz 12 00 @ 16 00 net @ dis 5 %
Hurd's ₱ doz 12 50 @ 13 50
Simmons' ₱ doz 12 00 @ 13 00
Morris' ₱ doz 12 50 @ 13 50
Red Jacket ₱ doz 12 00 @ 12 50
Mann's ₱ doz 13 00 @ 14 50
Powell Tool Co., "Peerless" ₱ doz 13 00 @ 14 50

Balances.

Chatillon's, Frary's, Morton's } new list, dis 15 %

Bands.

Plated add 10; dis 5 %
Iron add 5 %
Brass (Plated list) dis 5 %
Oroide dis 5 %

Bells.

Hand, Light Brass add 15; dis 5 %
White Metal dis 60&10 %
Globe dis 45&10 %
Abbe's dis 20 %
Taylor's Patent Door dis 10 & 10 %
Western Gong net
Brook's Crank net
" Pull net list.
Hart Mfg. Co., Crank and Pull dis 15 %
Cow—Common Wrought net list
Western new list dis 33⅓ %
Kentucky "Star" new list dis 33⅓ %
Dodge's Genuine Kentucky new list dis 10&10 %
Yaw's Genuine new list dis 25 %

Bellows.

Blacksmiths' dis 20 %
Moulders' dis 10 %

Blind Fasteners.

Van Sand's dis 10 %
Washburn's Patent ₱ gross $14 00
Merriman's ₱ gross 14 00

Blind Staples.

Boardman's Patent, ½ in. and larger add 35 @ 40%
" ⅜ in. " 42 c

Bolts.

Cast Iron Barrel, Shutter, &c old list dis 30&10 %
Wrought Iron Barrel dis 30&10 %
" Square net
Carriage and Tire, Common dis 10&10 %
Carriage and Tire, Norway Iron dis 60&10 %
Star, Philadelphia dis 40 %
Eagle, Philadelphia dis 40 %
Philadelphia Pattern, P. S. & W dis 40 %
Carriage and Tire, R. B. & W dis 50&5 %
Plow, R. B. & W dis 50&5 %
Stove R. B. & W
Hexa Nut Co dis 10 %
Machine

Boring Machines.

Kellogg's dis 10 @ 15 %
Snell Mfg. Co., Rice's Patent dis 10 @ 15 %
Snell Mfg. Co., Regular dis 15 %
Douglas Mfg. Co. dis 15 %
Hovey's Angle dis 20 %
Hovey's Upright $6 00 @ 6 25
Morticing Machines, each 4 25 @ 4 50

Braces.

Barber's Patent $18 00
Wilson Mfg. Co. dis 30&10 %
Spofford's Patent net @ add 5 %
Noble's Patent dis 37½ %
Bartholomew's dis 33⅓ %
Bartholomew's Patent dis 15&10 %
Q. S. Backus & Co. dis 25 %

Bung Hole Borers.

Common and Ring dis 30&10 %
Enterprise Mfg. Co dis 20 %
Ives' Tap Borers dis 20 %

Butchers' Cleavers.

Bradley's dis 20 %

Butts.

Beatty's dis 15 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$30·00	$33·50	$36·50	$40·00

0	1	2	3	4	5	6
$25·25	$29·75	$30·25	$38·75	$43·55	$48·50	$54·00

Wrought Brass new list dis 20 %
Cast Fast Joint Narrow " " Broad dis 15 %
Cast Loose Joint " " " Mayer dis 30 %
" " " Parliament dis 30 %
Loose Pin Butts, Plain " " Japanned dis 30 %
" " " National dis 25 %
Wrought Fast Joint, Narrow dis 25 %
Wrought Broad " " Loose Joint dis 40 %
Wrought Table and Back Flaps dis 10 %
Palmer Blind Butts dis 15 %
Nicholson Blind Butts net
Parker's Blind Butts dis 30 @ 35 %
Clark's Blind Butts dis 30&10 @ 35 %
Seymour's dis 25&10 @ 35 %
Shepard's dis 30 @ 35 %
Garretson's dis 30 @ 35 %
Standard dis 30 @ 35 %
Union Mfg. Co.'s Drilled Fast Narrow, new list dis 40 %
" " " " Loose Broad dis 25 %
Whitney & Walt's Bronze Metal dis 25 %

Caps—Percussion per 1000.

G. D. dis 35 %
Ely's E. B. dis 20 %
" Double Waterp'f, 1-4s, 81·57½; 1-10s, 75c, gold 40c
Colt's 1-4s, 82½c; 1-10s, 90c, gold

Cartridges.

Metallic dis 45 %

Cards.

Horse and Curry dis 35 %
Cotton dis 20&10 %
Wool dis 20 %

Casters.

Iron and Wood Wheel Plate new list dis 20&10 %
Brass Wheel Plate new list dis 20&10 %
Porcelain Wheel Plate new list dis 20&10 %

Chain.—By the Cask.

English Coil net gold

₱ lb.	13/8	10/8	9/8	9c	8¾c	8½c
	5-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2 ₱ pair, gold, 65c
Trace, 7-10-2 ₱ pair, gold, 70c
Galvanized Pump Chain ₱ lb 14c
German Halter Chain new list, gold, dis 10 %
German Coil new list, gold, dis 10 %
Jack Chain, Iron dis 35 @ 40 %
" " Brass dis 20 @ 25 %

Chalk.

White ₱ gross, 50c
Red ₱ gross, 75c
Blue ₱ gross, 75c
Crayons ₱ gross, 85c

Cherry Stoners.

"Family" ₱ gross, 14c

Chisels.

Socket Firmers dis 60&5 @ 60& 10 %
Socket Framing dis 60&10 %
Socket Corner dis 60&10 %
Tanged Firmers dis 60&10 %
Butcher's dis 40 @ 40&10 %
Spear & Jackson's $5 50 to £ gold—new list
Clips, Axle. $5 50 to £ gold—new list
Norway or Best dis 20 @ 30 %
Superior dis 40&5 %
"Star," Superior, Philadelphia dis 45&5 %

Coal Shovels.

Iron Handled ₱ doz, $ 85 @ 1 25
Wooden Handled ₱ doz, 1 00 @ 2 00

Coal Hods.

Smith, Burns & Co. dis 35 %

No.	14	15	16	17	18	
Japanned,	$9·00	9·75	10·50	12·00	13·50	per doz
Galvanized,	13·00	14·50	15·50	17·50	19·50	"

Cocks.

Brass Racking dis 10&10 %
Lock & Globe dis 10 %

Coffee Mills.

Common Board and Box dis 10&5
Better Grades dis 10 %
Increase Wilson's new list dis 10 %
French Steel dis 10 %
"Champion" dis 10 @ 20 %
Swift's dis 20 %

Compasses and Dividers.

Bemis dis 30 %
Excelsior dis 15&15 @ 20&5&15 %
Peck, Stow & Wilcox dis 20 %

Coopers' Tools.

Bradley's dis 20 %
Chas. E. Little dis 15 @ 20 %

Corn Knives and Cutters.

Bradley's dis 15 @ 20 %

Crucibles.

Gautier & Co. list net

Curry Combs.

Hotchkiss' and Kellogg's, Iron and Brass ₱ No. 5½c
Fitch's dis 10 %
Ruggles' dis 20 %
Rubber dis 20 %

Curtain Pins.

Silvered Glass ₱ doz., $9 00—dis 10 %

Cutlery.

American Table dis 40&10 %
American Pocket
Door Springs. dis 15 %
Torrey's Patent $7 50 ₱ doz—dis 20&10 %
J. Palmer ₱ doz $5 50

Drawing Knives.

Bradley's dis 60 @ 60&10 %

Drills.

Ingersoll's Ratchet (Wrought Iron) dis 25 %
No. 1, 12-in., $6 50 each; No. 2, 16-in., $8 75 each; No. 3, 20-in., $11 00 each.

Egg Beaters.

Monroe's ₱ doz net $8 25 @ 8 50
Ashley's ₱ doz net 2 25 @ 3 60
Earle's Patent ₱ doz net 5 50 @ 6 00
Pratt's Aerating dis 10 %
Dover dis 10 %

Emery.

₱ doz net $6 00
Genuine Chester—Regular Nos. ₱ lb 8c
" Flour and FF ₱ lb 5c } dis 5 %
Washington Mills—Regular Nos. ₱ lb 8c
" Flour ₱ lb 5c

Enameled and Tinned Ware.

Kettles dis 10 %
Sauce Pans, Glue Pots, &c. dis 5 %

Faucets.

Cork Lined, Wood dis 55&10 %
Fenn's dis 50 %
" Cork Stops dis 40 %
Star dis 40 %
Frary's Patent Petroleum dis 55&10 %
Taylor's Pattern Petrol um dis 10 & 10 %
Wood and Metallic dis 20&10 %

Files.

American Best dis 40 %
Nicholson—Mill $5 00 to £ net
" Others 5 00 to £ net
" Tapers (single cut) 5 00 to £ net
J. & Riley Carr's, Stubs' 5 50 to £ gold
Butcher's 8 00 @ 8 25 to £ gold
Spear & Jackson's 5 50 to £ gold
Hargreaves, Smith & Co.'s 5 50 to £ gold
Jowitt's 4 75 to £ gold
"Western" 5 25 to £ gold
W. K. & C. Peace's "Imperial" 5 00 to £ net
R. Ibbotson 5 25 to £ gold
Beam & Murray, "Cyclops" 5 00 to £ gold
Fisher, s 4 85 to £ gold
Goodlad's 4 75 to £ gold
Moss & Gamble 4 00 to £ gold

Fluting Machines.

Acme dis 20 %
Cole $7 00 each net
Manvill, No. 2 5 75 each net
Knox, with 4-inch Rolls 7 00 each net
" " 6 " " 5 00 each net
O. K. 6 00 each net
Excelsior, No. 1 6 50 each net
" " 2 4 75 each net
Diamond 6 50 each net
Climax, 7-inch Rolls 7 50 each net
" 4½ " " 8 00 each net
Empire 6 50 each net
Eureka, No. 1, 7-inch Roll 4 00 each net
" No. 2, 5-inch Roll 8 00 each net
K. F. M., 4½ inch Roll 6 00 each net
" 6-inch Roll 5 50 each net
Carpenter's Self-Heating 6 00 each net
Fairy, Self Heater 13 50 each net
National, 5-inch Rolls 10 00 each net
Myer's Fashion Fluter, 4½ inch Rolls 3 00 each net

Fry Pans.

Tinned—

₱ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No.	0	1	2	3	4	5	6	7	8

Peck, Stow & Wilcox dis 20 %
Smith, Burns & Co., "Excelsior" Polished dis 20 %

	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00	per doz.
No.	1	2	3	4	5	6	7	8.	

Hammers.

Maydole's new list net
Cheney's new list net
Verree new list net
Yerks & Plumb dis 5 %
Emmet Hammer Co. dis 10 @ 10 %

Handles.

Hammer and Hatchet dis 10 %
Quakertown, Axe, Pick and Sledge dis 10 %
" Hammer and Hatchet dis 10 %
Greensboro', Axe, Pick, Hammer, &c net
dis 10 %

Harness Snaps.

Judd's dis 30 %
Fitch's dis 30 %
Isaiah Blood dis 30 %

Hatchets.

Shingling, Nos. 1 2 3 ₱ doz $7 50 8 00 8 50 dis 10 %
Claw, " 1 2 3 ₱ doz 8 50 9 00 9 50
Lathing, " 1 2 3 ₱ doz 7 50 8 00 8 50
Hunt's net
Shingling, Nos. 1 2 3 ₱ doz $7 25 8 00 8 75
Claw, " 1 2 3 ₱ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ₱ doz 7 50 8 25 9 00
Hurd's dis 20 %
Shingling, Nos. 1 2 3 ₱ doz $8 00 8 50 9 00
Claw, " 1 2 3 ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ₱ doz 8 00 8 50 9 00
Newark Edge Tool Co's. dis 25 %
Shingling, Nos. 1 2 3 ₱ doz $6 50 7 00 7 50
Claw, " 1 2 3 ₱ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ₱ doz 6 50 7 00 7 50
Yerks & Plumb dis 10 %
Shingling, Nos. 1 2 3 ₱ doz 7 00 7 50 8 00
Claw, " 1 2 3 ₱ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ₱ doz 7 00 7 50 8 00
Simmon's dis 10 @ 15 %
Shingling, Nos. 0 1 2 3 ₱ doz 7 50 8 00 8 50 9 00
Claw, " 1 2 3 ₱ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ₱ doz 8 00 8 50 9 00
Broad, " 1 2 3 ₱ doz 9 00 10 00 12 00
" " 4 5 6 ₱ doz 14 00 16 00 18 00
" " 7 8 ₱ doz 20 00 22 00
J. P. Verree & Co. dis 5 %
Shingling, Nos. 1, 2, 3 ₱ doz $7 00 7 50 8 00
Claw, " 1, 2, 3 ₱ doz 7 50 8 00 8 50
Lathing, " 1, 2, 3 ₱ doz 7 00 7 50 8 00

Hinges.

Wrought Strap and T dis 15%
Providence Plate 6 & 8 in. list 11c } over 8 in. 9½c } dis 5 %
Screw Hook and Strap 8, 10, 12 in. 8½c } 14 to 36 in. 7½c } net

Hoes

Solid Shank, C. S. ₱ doz $8 00—dis 20 @ 25 %
Socket, C. S. ₱ doz 9 00—dis 20 @ 25 %
Riveted Eye ₱ doz 5 00—dis 20 @ 25 %
Planters'—Winsted dis 20 @ 25 %
Scovill add 10 %
Scovill Pattern (Winsted) add 33⅓ %
Scovill Pattern (Winsted) add 20 %

Hooks.

Belt dis 50 %
Bench dis 50 %
Wardrobe, Japanned ₱ doz net $5 00 @ 8 50
Hat and Coat " new list dis 10&10 %
Wrought Staples and Hooks and Staples new list dis 10&10 %
Wrought Hasps and Staples and Hasps, Hooks and Staples dis 60 %
Screw Hooks and Eyes, revised list dis 60&10 %

Horse Nails.

Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs. 5 % discount
Brundage.

No.	5	6	7	8	9	10
	29	26c	24c	23c	22c	21c

In lots of 500 lbs., dis 5 %
American Pressed.

No.	5	6	7	8	9	10
	22c	20c	20c	20c	20c	20c

Perkins Finished, (ready to drive).

No.	5	6	7	8	9	10
	29	26	24	23	22	21c

Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished), Extra Finish.

No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c

In lots of 1000 lbs., dis 5 %.
Vulcan.

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs., 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
W.B.	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis. 5 %.
Star Brand
Morgan ₱ lb 16c

Horse Shoes.

Burden 16 c
R. I. Horse Shoe Co. Perkins' Pattern ₱ keg, $6 37½
" " R. I. Pattern ₱ keg 6 87½
Mule Shoes ₱ keg, 7 37½

Kettles.

Enameled dis 10 %
Brass dis 10 %
In lots of 500 lbs. ₱ lb 55c
" ₱ lb net 50c

Knives.

Butcher and Shoe, "Ames" dis 15 %
Butcher and Shoe, "Wood's" dis 5 % cash
Hay and Straw, "Wadsworth's" dis 15 %

Knobs.

Base—Common net
" Plush Tip dis 10 %
Elastic End reduced list dis 10&10 %

Lanterns.

Brady's Patent dis 10 %
Ætna dis 10 %
Yankee dis 10 %
De Beque dis 10 %

Locks and Latches.

Cabinet—Eagle dis 25 %
Cabinet—Gaylord dis 25 %
Trunk dis 25 %
Continental dis 10 %
Shepardsons dis 15 %

Meat Cutters.

Dixon's (P. S. & W).

No.	1	2	3	4
₱ doz.	$14 00	$17 00	$19 00	$30 00

Hales' dis 5 %
o dis 10 %

₱ doz.	11	12	13
	$27 00	$33 00	$42 00

Perry's Champion (P. S. & W) dis 5 %

No.	300	300	400
₱ doz.	$22 00	$27 00	$40 00

Woodruff's (P. S. & W) dis 5 %

No.	100	150
₱ doz.	$15 00	$18 00

American dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.

Stebbins' Pattern dis 60&10 @ 70 %
Tinned ends dis 40&10 %
Weed's Patent Self-Boring dis 15 %
" without Auger Bit dis 40 @ 50 %
Patent Self-Measuring per doz $42 00—dis 20 %

Mouse Traps.

Wood Choker per dozen holes, 16 @ 18c

Nails.

10d Cut (Standard) ₱ keg $5 25

Nuts and Washers.

Cold Cut Nuts 3c off list
Hot " " 3c off list
Washers, (as to quality) less 3c @ 6c off list

Oil Stones.

Washita No. 1. ₱ lb 22c @ 25c
Washita Slips ₱ lb 44c @ 50c
Hindostan ₱ lb 7c
Hindostan Slips ₱ lb 10c net

Oilers.

Olmsted's dis 25&10 %
Broughton's dis 25&5 %
Common Zinc, Brass and Copper dis 20 %

Picks.

Washoe R. R. Nos.

per doz.	1	3	3	4	5
Washoe Coal,	$14·00	15·00	16·00	17·00	18·00
"	$3·50	9·00	10·00	11·00	12·00

Picture Nails and Knobs.

Richards' Patent dis 40 @ 40&10 %

Planes.

Auburn Bench and Fancy dis 15 %
Bailey's Patent Adjustable dis 15&10 %
Howland's Bench and Fancy dis 15&10 %
Chapin's " " dis 15 %
Chapin's, 2d quality dis 15 %
Sandusky Tool Co. dis 15&5 %
"Ogontz" dis 15 %
Plane Irons. list net
" "Butcher's $5 50 to £ gold—new list
" "Spear & Jackson's $5 50 to £ gold—new list
" Sandusky Tool Co. list net

Pumps.

Douglas Cistern, etc. new list dis 25 %
" S. & F. new list dis 20 %

Rakes.

Cast Steel dis 25

$8 00	$9 00	$10 00	$11 00
8	10	12	14 teeth.

Razor Straps.

Genuine Emerson (B. F. Badger) dis 33⅓ %
Hunt's dis 25&10 %
Chapman dis 10 @ 15 %

Rivets.

Iron and Tinned
Copper Rivets and Burrs dis 25 %

Rods.

Stair new list dis 25 %
American Patent dis 25 %

Rope.

Manila Manufacturers' List.
" ½ inch and larger ₱ lb 18c
" ⅜ inch ₱ lb 18½c
" Lath Yarn ₱ lb 19c
" Hay Rope ₱ lb 19c
Jute ₱ lb 18½c
Sisal ₱ lb 12c
" ½ inch and larger, ₱ lb 15½c
" ⅜ inch ₱ lb 16c
" Hay Rope ₱ lb 16½c

Rules.

Boxwood and Ivory dis 60&10 %

Sad Irons.

Sand Paper

—dis 7½ @ 10 % ₱ lb 5½ @ 6c
Beader & Adamson's (Flint) 00 to 1½ $4 50 ₱ ream
" " 2, 2½ &3 5 00 "
Assorted 4 50 "
Star ₱ ream $3 50
Emery ₱ ream $7 00 @ 12 00

Sash Locks.

Clark's dis 25 @ 30 %
Ferguson s dis 20 @25 %
Champion per gross $13 00 @ $15 00
Norwich dis 15 %

Sash Weights.

Solid Eyes ₱ lb 3½c

Sausage Fillers.

Perry's (P. S. & W) dis 5 %
No. 1 0
₱ doz $15 00 $21 00

Saw Rods.

list net

Saws.

Spear & Jackson's $4 50 to £ gold
John Spear $2 60 to £ gold
Am. Saw Co. new list
Perforated Cross Cuts, all kinds new list
Inserted Tooth 68c per foot
All else dis 10 %
Disston's Cross Cut, Circular and Mill dis 12½ %
Hand, Panel, Back, &c. dis 12½ %
Butcher Bow Saws, Butcher Saw Blades, Hack Saw Blades dis 7½ %
H. W. Peace s Circulars dis 12½ %
Other kinds dis 10 %
Wm. McNiece's Hand, Cross Cut an l Circular dis 10 %
Lightning new 1st dis 10
" new list dis 20&12½

Scales.

Fairbanks' dis 15 @ 20 %
Howe's new list dis 15 @ 20 %
Shattuck's Counter and Union dis 15&5 %
National Platform dis 15 %
Eureka dis 25 %
Scale Beams dis 25 %
No. 1 360 to 1200 lbs. dis 20 %
No. 2 " " 75c ₱ cwt

Screws.

American list of April 1, 1873.
Flat Head Iron dis 47½ %
Round Head Iron dis 45 %
Flat Head Brass dis 60 %
Round Head Brass dis 50 %
Round Head Silver Capped new list dis 20 %
Patent Gimlet Point Coach and Hand Rail dis 10 %
Bed list net

Scythes.

Blood's German Steel, Grass ₱ doz $ 9 00
" Cast " " ₱ doz 10 00
" Silver " " ₱ doz 11 00
" German " Grain ₱ doz 13 00
" Cast " " ₱ doz 14 00
" Red Rover 12 00
" Young America 9 50
" Silver Clipper 12 63
Scythe Snaths dis 20 %

Shears.

Cast Steel dis 60 @ 67&10 %
Seymour's dis 50 @ 50&10 %
Conn. Cutlery Co., new brand dis 60 %

Shovels and Spades.

Ames list July 1, '70, list net @ dis 2½ %
Rowland new list Feb. 8, '73, dis 20 %
Old Colony dis 2½ %

Shovels and Tongs.

Iron Head list net
Brass Head dis 5 %
Polished Steel new list dis 15 %

Slates.

Square Frames, R'd Corn'd, by case dis 60&10
Less than a case dis 50 @ 55 %
Oval Frames, by case dis 40 @ 40&10 %
Less than a case dis 30 %

Spoons.

Iron new advanced list dis 10 %
By the case dis 20 %
Britannia dis 25&10 %
Plated A 1 dis 25&10 %
German Silver dis 25&10 %
Tinned (P. S. & W.)— net @ dis 5 %
Teas $1.50 ₱ gross, net
Tables 2·75 "

Stocks and Dies.

dis 15 %

Stove Polish.

Joseph Dixon's ₱ gross $6 00 @ 6 25
Gold Medal ₱ gross $5·5

Squares.

Steel dis 50 %; full cases, dis 50& 0
Iron dis 50 %; full cases, dis 50&10
Nickel Plated add $2 50 @ $4 00 ₱ doz net
Try Squares and T Bevels dis 45&10 %
Star Try Squares and Bevels dis 20 %

Tacks.

Full Weight American Iron dis 40&7½ %
Half Weight American Iron dis 70&7½ %
Carpet dis 7½ %
Brads American dis 50&7½ %
Finishing Nails ½ ⅝ ¾ ⅞ 1 in. and over
₱ lb 25 20 17 14 12½c dis 7½ %
Trunk and Clout ½ ⅝ ¾ ⅞ 1 in. and over
₱ lb 25 20 17 14 12½c dis 7½ %
Copper Tacks ₱ lb 56c—dis 7½ %
Iron Shoe Nails, ₱ lb 4-8 and longer, 10c; 3½-8, 10½c dis 7½ %
Double Pointed new list dis 33⅓
Tapes, Measuring
American Flask and Cap Co dis 10&10 %
Eddy's dis 10&10 %

Toe Calks.

Tobacco Cutters.

Champion per lb 19c
Peck, Stow & Wilcox dis 20
Traps. dis 10 %
Newhouse
Hotchkiss dis 17½ %
Peck, Stow & Wilcox dis 20 %
Blake's Patent dis 30 %

Vises.

Trenton Vises, Solid Box dis 15 @ 20 %

30 to 110 lbs.	17c
111 to 160 lbs.	18c
160 and over	21½c

Peter Wright's
Wilson's Solid Box ₱ lb 15½c, gold

39 to 160 lbs.	dis 10 @ 15 %
160 and upward	18c

Backus & Union, Parallel 21c
Buffalo, Parallel dis 25 %
Fisher & Norris' Double Screw Par new list dis 15 %

Wire.

Bright and Annealed Nos. 0 @ 18 dis 25 @ 30 %
" " Nos. 19 @ 26 dis 35 @ 40 %
Coppered Nos. 27 @ 36 dis 40 @ 45 %
Galvanized Nos. 0 @ 18 dis 20 @ 22½ %
Tinned dis 35 @ 40 %
Cast Steel dis 15 @ 20 %
Tinned Broom Wire net @ 5 %
Galvanized Telegraph, Nos. 8 & 9 dis 20 @ 25 %
" " 10 & 11 ₱ lb 10 @ 11c
" " 12 ₱ lb 11 @ 12c
Annealed Fence. Nos. 8 & 9 ₱ lb 11½ @ 12½c
" Grape, " 10 to 14 dis 25 @ 30 %
Fence Staples dis 25 @ 30 %

Wrenches.

Baxter's Adjustable "S" dis 30 %
Baxter's Diagonal dis 20 %
Collins & Co.'s dis 20 %
Coes' Genuine new dis list 30 %
Coes' Pattern (Wrought) dis 30&10 %
" " (Malleable) dis 45 %
Lindsay's Patent dis 50 %
Taft's Pattern dis 25 %
Davis' Patent Duplex dis 40 %

METALS.

IRON.—DUTY: Bars, 1 to 1¼ cents per lb., Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Pol- ton; Cast Scrap, $6 per ton. All subject to a reduc- tion of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron.

AMERICAN.

Foundry No. 1 ₱ ton $50 00 @
Fouadry No. 2 " 46 00 @ 48 00
Gray Forge " 40 00 @ 42 00
White and Mottled "

SCOTCH.

Gartsherrie "
Coltness " 60 00
Glengarnock "
Eglinton " 55 00 @ 56 00
" " 54 00 @ 55 00

Bar Iron.

Am. Refined, at mill ₱ ton, 100 00 @

Rails.

Welsh, gold
American, at works, currency, ₱ ton, 70 00 @ 72 00
Old Rails, D. H. currency " 80 00 @ 85 00
Scrap iron. " 57 00 @ 58 00
Wrought Scrap, from yard " 55 00 @ 57 50

Bar Iron from Store.

Common Iron ₱ ton $100 00
¾ to 2 in. round and square " 105 00
½x9-16 in. " 107 50
⅜ in. " 105 00
2¼ to 3 in. " 100 50
o 6 in. wide x ¾ and 1 in. thick " 105 00
⅛ to 6 in. wide x ¼ & 5-16 in. thick " 107 00
and 1¼ in. x ¼ and 5-16 " 107 00

Swedish on.
1¼x⅜ and ½ ₱ ton 160 00
1½x⅜ to ⅝, and ¼ square " 155 00
1¼ to 5x⅛ to ⅜ and ⅞ to 2-in. square " 150 00
6 to 12x⅜ and ½ " 160 00
Refined Iron.
¾ to 2 in. round and square " 107 50
1 to 6 in. wide x ⅜ to 1 thick " 107 50
1½ to 6 in. wide x ½ and 5-16 thick " 112 50
1 and 1⅛ x ¼ and 5-16 " 115 00
Large Rounds.
2⅛ to 2⅞, round and square " 125 00
3, 3⅛ and 3½ in. " 120 00
3¾ and 4 in " 127 50
Rods—⅜ and 11-16, round and square " 112 50
⅝ and 9-16, " " " 117 50
7-16, " " " 120 00
½, " " " 125 00
5-16, " " " 130 00
¾ " " " 135 00
3-16, " " " 132 50
Band Iron.
1 to 6 in. x 3-16 to No. 12 " 125 00
Horse Shoe Iron.
¾ and ⅞ x ⅜, to ½ " 127 50
1 x ⅜, to ⅝ "
Ovals, Half Ovals and Half Rounds.
¾ to 1½ ₱ ton 132 50
⅝ and 11-16 " 137 50
½ and 9-16 " 142 50
7-16 "
⅜ "
Nail Rods
UB.
Norway Shapes ₱ lb 9½c
¾ to 2 in x ¾ to ¼
¾ to ⅜ square " 9½c
Norway Bar. " 9½c
¾ to 2 in. square
Spring Steel.
1 to 4 in. wide " 9½c
Fire Steel
⅞ to 1¼ x ¼ & 5-16 " 9½c
⅞ & 1 x 3-16 " 9½c
⅞ & 1 x ⅛ " 9½c
Toe Calk Steel " 10½c
Plow Steel.
⅝ to 7/8 x ⅜ to ½ " 8½c
6 to 16 wide
Sleigh Shoe Steel " 9½c
⅞ to 1½ x ⅜ to ⅝
Hoops, ⅝ x No. 22 Stock " 7½c
" ¾ x No. 20 ₱ ton 180 00
" ⅞ x No. 19 " 150 00
" 1 and 1⅛ x No. 18 " 145 00
" 1¼ to 2 and 1x1⅛ x No. 13 & 14 " 140 00
Scroll Iron—⅜x12 " 125 00
" " 10 " 160 00
" " 3-16 " 155 00
" " ⅛ " 140 00
" ⅝ x 14 " 145 00
" " 12 " 160 00
" " 10 " 155 00
" " 3-16 " 150 00
" " ⅛ " 145 00
" ¾ x 14 " 140 00
" " 12 " 150 00
" " 10 " 145 00
" " 3-16 " 140 00
" " ⅛ " 135 00
" ⅞ x 14 " 132 50
" " 12 " 145 00
" " 10 " 140 00
" " 3-16 " 135 00
" " ⅛ " 132 50
" " " 130 00

Sheet Iron.

		English.	American
No. 10 to 20	₱ lb	6¾c	8c
21 to 24	"	7⅛c	8½c
25 to 26	"	7⅜c	8⅝c
27	"	7⅝c	8¾c
28	"	7¾c	8¾c
30	"	8c	9c
Galvanized, 10 to 20	"	8½ @ 9c	
21 to 24	₱ lb		12c
25 to 26	"		13c
27	"		14c
atent Polished	"		15c
Russia	"		
" Nos. 8 @ 11.	"	20c @ 22	c
Belgian Nos. 13 @ 16,	"	20c @ 22	c
"	"	18	c

One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

4½	5	5½	6	7 inch.
$3 75	4 25	5 25	5 25	6 50 per doz.

RUSSIA IRON.

4½	5½	6	7 inch.
$7 00	00	13 00	14 00 per doz.

Brass.

ROLLED AND IN SHEETS.
(Brown & Sharp's Gauge.*)

For the purchase of 100 pounds and over at one me:

HIGH BRASS.

All Nos. to No. 28, and widths 14 in. and under 40c
All Nos. to No. 28, inclusive and widths over 14 to 20 in. inclusive 43c
Over 20 in. to 30 in., inclusive 48c
Half-cent ₱ lb advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at 59c.
Sheets 24x48 in., and all sheets cut to particular sizes and lengths 50
Printers' Rules 40c
Sheets wider than 30 in. and under 40 in 50
" 40 " and over 50c
Circular sheets, in diam. from < in. to 14 inclusive 50c
Circular sheets, in diam. over 14 in. to 20 inclusive 53c
Circular sheets, in diam. over 20 in. to 30 inclusive 56c
Circular sheets in diam. over 30 in. to 40 inclusive 59c
" " over 40 in 62c

LOW BRASS.

4 cents ₱ lb more than High Brass.
Gilding Metals, &c. ₱ ₱ more than High Brass.
Platers' or Gold Metal { In Bars 52c / Sawed 55c

FOR SLITTING: Metal in Width,
in. to 1 in., thinner than No. 30, inclusive, 1c. ₱ lb advance.
in. to 1 in., thinner than No. 30, 2c. ₱ lb advance.
n. to ⅛ thinner than No. 30, 3c. ₱ lb advance.
⅛ in. and less to No. 30, 2c. ₱ lb advance.
¼ in. and less thinner than No. 30, 5c. ₱ lb advance
10 % discount.

SCRAP.

Copper and Brass Rivets and Burs made to particular sizes and pattern.

The discount on the foregoing list will be 10 per cent.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent. 12 inch. to No. 26	0·65	0·80
6 " " "	0·75	0·90
10 " " "	0·90	1·10
15 " " "	1·00	1·25
18 " " "	1·10	1·40
20 " " "	1·20	

German Silver Sheets over 12 inches wide and weighing more than 10 lbs. $2·60 ℔ lb extra

Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.

All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.

German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap.

*Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Guage.

COPPER—DUTY: Pig, Bar and Ingot, 5; old copper, 4 cents ℔ lb; Manufactured (including all articles of which copper is a component of chief value), 45 % ad valorem. All subject to a reduction of 10 per cent.

American Ingot ℔ lb 35½ @ 35c
English " 30 @ 31c

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers Copper, ordinary sizes, over 16 oz., per square foot 45c. ℔ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot 48c. "
Braziers' Copper, 12 oz. per square foot and lighter 51c. "
Circles less than 84 inch in diameter 48c. "
Circles, 84 inch diameter and over 51c. "
Segment and Pattern Sheets 48c "
Locomotive Fire Box Sheets 45c. "
Sheathing Copper, over 12 oz. per sq. ft 43c. "
" " 12 oz. ℔ sq. ft. & lighter 51c. "
Bolt Copper 45c. "

No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case 8c. ℔ sheet.
14x48, less than case 10c. "
Boiler Sizes, 7 and 8 inch 12c. "
" " 9 inch 15c. "
Other sizes not larger than 30x60 2½c. ℔ sq. ft.
Larger than 30x60 5c. " "
Copper Bottoms, 48c ℔ lb.; 5 % discount.

O'NEIL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier 49c. By the case, 48c. ℔ lb
12 oz. and lighter 52c. " " 51c. "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier 51c. By the case, 50c. ℔ lb.
(And all sizes not over 20 inches wide).

30x60.

14 and 16 oz. and heavier 53c. ℔ lb.
2 oz 56c. "

LEAD—DUTY: Pig, $2 per 100 lbs.; old Lead, 1¼ cent per lb.; Pipe and Sheet, 2¼ cents per lb. All subject to a reduction of 10 per cent.

Spanish @ 6¾c gold
German Refined @ 6¾c gold
English @ 7¾c gold
Bar dis 10 % 9¾c
Pipe dis 10 % 10½c
Tin Lined Pipe dis 10 % 16½c
Sheet dis 10 % 10½c
Shot dis 10 % Drop, 11¼c; Buck, 12¼c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 3½ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool 17c
Spring 13½c
Homogeneous 13½c
Tire 12½ @ 13½c
Machinery (round and square) 11¼ @ 12c
File 12½
Sheet 14 @ 16c
Saw Plate, mill and mulay 14 @ 16½c
aw Plate, gang and X cut 13 @ 14
circular as to size 18 @ 30c

Chrome Steel.

Tool 16 @ 18c
Machinery 11 @12c
File 12 @ 15c

English Steel—payable in gold, dis. 5 % cash.

do Best Cast ℔ lb 19½c
do Extra Cast " 20½c
do Round Machinery, Cast. " 19½c
do Swaged, Cast " 21½c
do Best Double Shear " 19½c
do Blister, 1st quality " 15½c
do do 2d quality " 13½c
do do 3d quality " 11½c
German Steel, Best " 12½c
do Eagle " 11½c
do 3d quality " 10½c
Sheet Cast Steel, 1st quality " 19½c
do do 2d quality " 17½c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash 8¼ to 8½c. gold
American " 8 @ 11c currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per lb.; Manufacturers of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Banca or Block, and Pigs, free.

Banca ℔ lb 38½c. gold
Straits ℔ lb @ 34c. gold
English ℔ lb @ 32c. gold

CHARCOAL TIN PLATE.

C 10x14, Prime Charcoal	14·50 @	14·75
12x12, "	15·00 @	15·25
14x20, "	15·50 @	15·75
I X 10x14,	16·75 @	17·00
12x12, "	17·25 @	17·50
14x20 "	17·75 @	18·00
For each additional X add	2·25 @	2·50

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$14·25	$13·25	$12·75
14x20	15·00	13·75	
12x12	14·50	13·75	

TERNE PLATE.

	Prime. Charcoal.	2d qual. Charcoal.	Coke.
C 14x20	$13·25 @ 13·75	13·00 @ 13·50	11·50 @ 13·00
I X 14x20	15·50		

ZINC—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet, 2½ cents per pound. All subject to a reduction of 10 per cent.

Sheet cask 11 c
" open 11½c

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters ℔ lb 20
" " Ordinary 6c
" Ivory Drop, fair 15c
" best 26c
Black Paint, in oil kegs, 8c, asst'd cans, 10½c
Blue, Prussian, fair to best 50 @ 75c
" " " in oil 35 @ 65c
" Chinese, dry 83c
" Ultamarine 25 @ 30c
Brown, Spanish 1¾c
" Van Dyke .4c
Carmine, French $14 00
Green, Chrome 15 @ 25c
" " in oil 18 @ 25c
" Paris good, 20c, best, 40c
" " in oil " 30c, " 45c
Mineral Paints 1¼ to 4c
Orange Mineral 14½c
Red Lead, American 9¾c
" " English 10½c
" Venetian (N. C.) dry 2½c
" " in oil asst'd cans, 11c, kegs, 8½c
" Indian, dry 10c
Rose Pink 13c
Sienna, American, Raw 4c
" Burnt 4½c
" " in oil 16 @ 26c
" Raw " 15 @ 25c
Umber, Burnt 4 @ 8c
" " in oil 16 @ 21c
" Raw 3½ @ 7½c
" " in oil 16 @ 22c
Vermillion, Chinese 1 40
" English 1 36
" Trieste 1 16
" American, Common 23c
White Lead, American, pure dry 11½c
" " in oil 12 c
White, Paris, English, prime in bbls. 2½ @ 2¾c
Yellow Ochre, French 2½ @ 2¾c
" " in oil asst'd cans, 11c, kegs, 8½c
" Vermont in casks 1½c
" Chrome 17 @ 27c
" " in oil 18 @ 28c
Zinc White, American No. 1 dry scarce 10c
" " " 1, in oil 12c
" French (Paris) 11½c
" in oil 12½c

Oils.

Linseed Raw ℔ gal. casks, 95c, bbls, 96c
" Boiled " 1 00c, " 1·01
Whale, Crude "
" Bleached Winter "
Sperm, Crude "
" Winter unbleached "
" Bleached " 1 85
Seal, Extra Refined " 87½c
Lard, Pure Winter " 75c
" Spring " 73c
Cotton Seed, Crude " 55c
" Southern Yellow " 65c
" White " 75c
Neatsfoot, Winter " $1 35
Natural Lubricating " 45c

Sundries.

Asphaltum 8c
Benzine ℔ gal. 20c
Chalk 1½c
" Block
Dryer, Patent, Am'n asst'd cans, 11½c., kegs, 9c
" " English " " 12c., " 11c
Flocks
Frostings 50c
Glue, White 33 @ 45c
" Sheet 20c
Glazier's Points, Zinc 9c
Gum, Copal 30c
" Damar 25c
" Shellac, English 50c
" " dark 46c
Litharge 10c
Pumice Stone, selected Lumps 5 @ 7c
" powdered 4c
Putty in bladders 3½c
" in bulk 3c
Rotton Stone, soft, English 8c
Sand Paper, crystal $3 25
" flint 50
Spirits Turpentine 60c
Whiting, Spanish 1½c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$10·75	$9·75	$9·00	$8·25
11 x 14 & 12 x 13	11·50	10·25	9·75	8·75
10 x 16 to 14 x 26	12·50	11·50	10·25	9·00
18 x 22	13·25	12·00	10·75	9·50
15 x 26 to 20 x 30	15·75	14·00	12·00	10·25
22 x 30 to 24 x 30	19·75	16·75	13·50	
26 x 28 to 24 x 36	20·25	17·50	14·00	
26 x 36 to 26 x 44	22·75	20·25	15·50	
28 x 44 to 30 x 50	24·00	21·50	16·75	
30 x 52 to 30 x 54	27·25	24·00	18·75	
30 x 56 to 34 x 56	29·50	26·25	22·00	
34 x 58 to 34 x 60	31·50	29·50	25·00	
36 x 60 to 40 x 60	37·00	32·50	29·50	

DOUBLE

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·00	$14·50	$13·50	$12·50
11 x 14 & 12 x 13	17·25	15·50	14·75	13·25
10 x 16 to 14 x 26	18·75	17·25	15·50	13·50
18 x 22	20·00	18·00	16·25	14·25
15 x 26 to 20 x 30	24·00	21·00	18·00	15·50
22 x 30 to 24 x 30	30·00	25·25	20·25	
26 x 28 to 24 x 36	31·00	26·50	21·00	
26 x 36 to 26 x 44	34·00	30·50	23·25	
28 x 44 to 30 x 50	36·00	32·25	25·25	
30 x 52 to 30 x 54	41·00	36·00	28·25	
30 x 56 to 34 x 56	45·00	39·50	33·00	
34 x 58 to 34 x 60	48·00	45·00	37·50	
36 x 60 to 40 x 60	55·00	49·00	45·00	

Sizes above—$12 ℔ box extra for every five inches. Discount to the trade 50 per cent.

PHENIX

FIRE AND MARINE INSURANCE CO.,
Of Brooklyn, N. Y.
Principal Office, No. 173 Broadway.

Cash Capital	$1,000,000·00
Net Cash Assets	$1,862,000·00

Paper Stock, Old Metals, &c

(Dealers' Selling Prices.)

Canvas linen 5¾ @ 6
Canvas, cotton, No. 1 7¼ @ 7½
" " No. 2 4
White linen rags, No. 1 7 @ 7¾
" " No. 2 5 @ 5¾
Colored 3 @ 3½
Mixed woolens 2 @ 3
Soft woolens 9 @ 10
Gunny bagging 2¾ @ 3
Jute Butts 2 @ 2¼
Kentucky bagging 3¼ @ 3¾
Book stock 4½ @ 5
Waste paper and scraps 2½ @ 3
Rope cuttings 1½ @ 3
Kentucky Bale rope 4 @ 4¼
Oakum junk, No. 1 5¼ @ 5½
" " No. 2 4¼ @ 4½
Grass rope 4¾ @ 5
Tarred Shaking 1¾ @ 2

Old Metal.

Copper 27 @ 28
Yellow metal 18 @ 20
Brass 18 @ 21
Old lead, solid 6¼ @ 7
Tea lead 5¾
Wrought Iron 2¾
Sheet iron 1 @ 1¾
Cast iron 1¼ @ 1¾
Machinery iron 1¾ @ 2
Zinc @ 5¼
Pewter, No. 1 26 @ 27
" No. 2 19 @ 12
Spelter 7

Fire Brick.

B. KREISCHER & SON.,
New York Fire Brick &
STATEN ISLAND
CLAY RETORT WORKS,
Established 1845.
Office, 58 Goerck Street, cor. Delancy Street,
East River, New York.

The largest stock of Fire Brick of all shapes and sizes on hand, and made to order at short notice.

Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Kaolin for Rolling Mills and Foundries. Stone Ware and other Fire Clay and Sand, from my own mines at New Jersey and Staten Island, by the cargo or otherwise.

BLACK LEAD
CRUCIBLES.
Manufactured by
ADAM NEWKUMET,
1537 & 1539 N. Front St., Phila., Pa.,
For Steel, Brass, Nickel, Copper, Bronze, &c.
Equal to any in the market, and all guaranteed.
☞ Keeping a full stock of all sizes on hand, and being confident of giving *entire satisfaction*, we respectfully ask consumers to give us a trial

Salamander & Albany Fire Brick Works
Rathbone St., Albany, New York.
PALMER, NEWTON & CO.,
Manufacturers of **FIRE BRICK** of every shape for Gas Works, Tanneries, Lime Kilns, Rolling Mills, Blast Furnaces, Glass Works, Stove, Range and Heater Linings; Fire Clays, Kaolin, Fire Sand, Fire Cement, by cargo or barrel. Orders filled on short notice.

Philadelphia Fire Brick
AND
Clay Retort Works,
AND KENSINGTON FIRE BRICK WORKS
Office, 23d and Vine, Philadelphia.
PHILIP NEWKUMET,
Successors to **JOHN NEWKUMET,** Proprietor, manufactures 9-inch Fire Bricks, Tiles, and Blocks, for Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Glass Houses, &c., &c
Articles of every description made to order at short notice, and in a very superior manner.
"CLAY RETORTS FOR SUGAR HOUSES."

TRENTON
Fire-Brick and Terra-Cotta Works.
Fire-Brick, Blast Furnace Blocks
Of all shapes and sizes, Fire Clay, &c.
Stoneware, Drain and Sewer Pipe, from 2 to 18 inches Bore. Terra-Cotta Chimney Tops, Chimney Flues, Garden Vases, &c. Send for Price List and Illustrated Catalogues to
O. O. BOWMAN & CO., Trenton, N. J.
Branch Office, 47 Dey Street, N. Y.

Watson Fire Brick Manufactory,
ESTABLISHED 1836.
JOHN R. WATSON, Perth Amboy New Jersey,
Manufacturer of
FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.
FIRE CLAYS, FIRE SAND, AND KAOLIN FOR SALE.

A. HALL & SONS, Perth Amboy, N. J.
ESTABLISHED 1846.
HALL & SONS, Buffalo, N. Y.
ESTABLISHED 1866.
FIRE BRICK
of reliable quality for all purposes, manufactured of the best New Jersey Fire Clays. Also, MINERAL KNOBS ROCKINGHAM WARE, Fire Clay, Fire Sand, Kaolin and Ground Fire Brick.

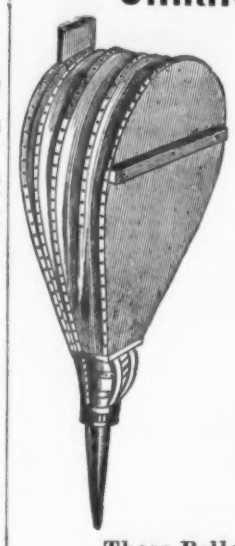
Brick Presses.

BRICK PRESSES,
For Fire and Red Brick.
PATENT STEAM GEARING
For grinding Clay for Red or Fire Brick, and all kinds of **Brick Machines** in general.
Works, 1819 Germantown Ave., Phila.
GEO. CARNELL.

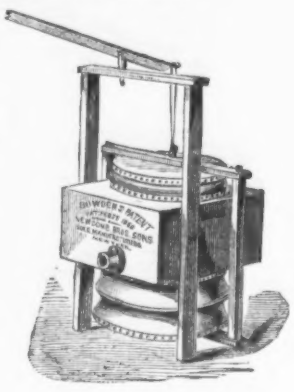
Oldest and Largest Establishment of the kind in the U. S.
F. L. & D. R. CARNELL,
1844 Germantown Avenue, Philadelphia.
Manufacturers of Pennsylvania Brick Machine, Little Giant Pipe Machine, Fire and Red Brick Presses, Clay Wheels, Tile Machines, Stampers, Grinding Pans. Brick Yards fitted out for running by steam or horse. Heavy and Light Castings. Send for circular.

BRICK PRESSES
For Fire and Red Bricks.
BRICKMAKERS' TOOLS.
Factory, 309 South 5th St., Philadelphia.
Established 1844.
S. P. MILLER.

GEORGE E. NEWCOMB. JAMES W. NEWCOMB. JOHN H. NEWCOMB.
NEWCOMB BRO'S SONS,
Manufacturers of
Smiths', Moulders' and Hand



Also the Sole Manufacturers of
Bowden's Patent
TRIPLE-ACTION
Forge Bellows.



These Bellows are superior to all others now in use.

They can be used either in single or double-action, for light or heavy work, as required. They maintain a steady and continuous blast, the air being forced into the chest both at the up and down stroke. The strength of blast obtained is double that of the ordinary bellows of the same dimensions. They work easily. While the blast is double, the power required to work them is no more than that of a common bellows. Being fully rigged and geared, ready for work, and easily moved from place to place, they are very convenient or rail road, mining, and other purposes where portable bellows are required. They economize space, occupying only half the room of an ordinary bellows. These Bellows come to hand at once. A good blast is obtained at the first stroke, and no time or labor is lost, as in the old single-action bellows, in getting up a good blast. They can be made of any size and shape, to suit all requirements. They are the cheapest Bellows in the world. With all the advantages of double-action, they cost no more, power for power, than the common single-action of same quality. For further particulars send for descriptive circular and price list.

586 Water St., near Montgomery, N. Y.
STATE RIGHTS FOR SALE.
Canal Street, East Broadway and South Street Cars cross Montgomery Street.

Improved Stationary Engines.
Always on hand assortment of sizes from 10 to 200 horse power. Second-hand engines taken in exchange when desired.
Climax Turbine Water Wheels.
Assortment of sizes always on hand.
Pulleys, Shafting, Gearing and General Machinery.
Send for Circular.
WHITEHILL, SMITH & CO., Newburgh, N. Y.

THE CORRUGATED STOVE PIPE ELBOW,

Strong, Cheap. Durable, No Soot, Better Draft.
MANUFACTURED BY
SELLEW ELBOW CO.,
48 Cliff Street, NEW YORK. 27 North Canal Street. CHICAGO.

The National Screw Co.,
MANUFACTURERS OF
Patent Dovetailed Slot Gimlet-Pointed
IRON AND BRASS SCREWS.
COMPLETE ASSORTMENT OF SIZES.
RUSSELL & ERWIN MFG. CO., Sole Agents
45 and 47 Chambers Street, New York.
P. O. Box 3288. Orders filled promptly.

D. H. WHITTEMORE'S
MEAT CUTTER, APPLE PARER, etc.
The smallest size Meat Cutter will cut Sausage Meat one pound per minute, Pie Meat, two pounds per minute, and Hash for a family meal in one-half minute. Sells for $3. Price, $27 per doz.; large size, $7·50 each—$67·50 per doz. Any size furnished.
Bay State Apple Parer, Corer and Slicer requires but 4 turns of the crank to an apple. $15 per dozen; large and heavy, $42 per doz.
Skeleton Apple Parer, Corer and Slicer for family use, $9 per doz.
Union Apple Parer, greatly improved for 1873, $9 per doz.
Bay State Peach Parer, pares Apples, Potatoes, etc., $12 per doz.
Peach Stoner & Halver, works well on all kinds of Peaches, $6 ℔ doz.
All are the best in the market. Liberal discounts on early purchases.
D. H. WHITTEMORE, Worcester, Mass.

GERS 1810

Genuine Emerson's Razor Strap.
[ESTABLISHED 1810.]
BENJAMIN F. BADGER,
MANUFACTURER.
51 ELM STREET, CHARLESTOWN, MASS.
Ent'd according to Act of Congress in the year 1866, by Benj'n F. Badger, in the Cl'k's Office of the Dis. Court of Mass.

HILL'S ARCHIMEDEAN" LAWN MOWER.

THE CHAMPION OF THE WORLD.

he first and only Balanced Lawn Mower made and operated by an Adjustable Handle.

The leading Machine both in the United States and Europe, having taken the Gold Medal at the great Fair in Hamburg, Germany, and the Premiums at every te.t trial in the U. S. Also the Si ver Medal at the Cincinnati Exposition of 1872.

So well known is this favorite Lawn Mower that it needs no further recommendation. It has a greater reputation, and larger sale, both in the United States and Europe, than any Lawn Mower made, and the first and only one constructed upon those principles.

What we claim for it over others is ease of operating, *durability*, and beauty and evenness of its work.

We wish more particularly to call attention to the addition we have made to our list, of 2 sizes of Horse Mowers, and one beautiful little Croquet Mower for small Lawns and Cemetery Lots, which is the most complete thing of its kind made, and is easily operated by a Miss of ten years. Our list is as follows:

10 inch Croquet Mower, for Miss, $20·00. 14 inch, for Man - - - - - - $25·00.
12 inch, for Boy - - - - - - 22·00. 28 inch, for Pony - - - - - 100·00.
32 inch, for one Horse - - - $125·00.

Send for circulars. Manufactured by the

Hills Archimedean Lawn Mower Co.,
Colts Armory, Hartford, Conn.

SEMPLE, BIRGE & CO., General Agents, West of the Mississippi, St. Louis, Mo.

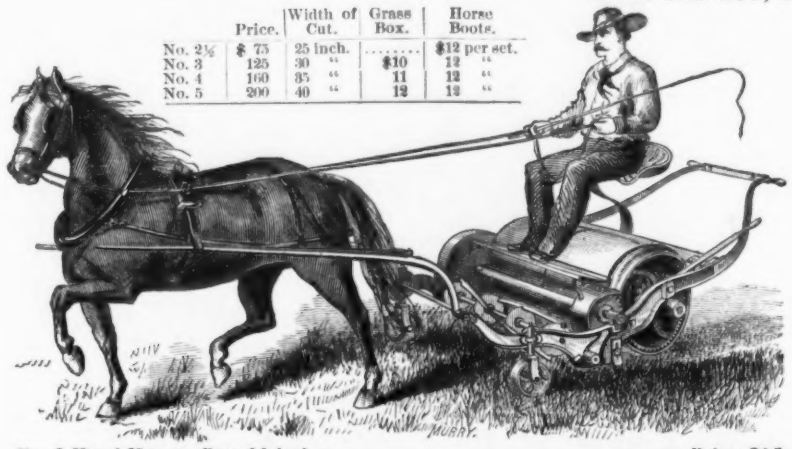
The Improved Excelsior Lawn Mowers,

FOR HAND OR HORSE POWER, MANUFACTURED BY

CHADBORN & COLDWELL MANUFACTURING CO.

P. O. Box 479, NEWBURGH, N. Y.

	Price.	Width of Cut.	Grass Box.	Horse Boots.
No. 2½	$ 75	25 inch.	.....	$12 per set.
No. 3	125	30 "	$10	12 "
No. 4	160	35 "	11	12 "
No. 5	200	40 "	12	12 "



No. 0 Hand Mower—Cuts 11 inches.....Price, $16.
No. 1 " — " 14 " ..... " $25.
No. 2 " — " 18 " ..... " $30.

The No. 1 for general use, and warranted. The No. 2 for large lawns—when smooth.

For Sale by all the leading Hardware, Agricultural Implement and Seed Stores, in this and foreign countries.

Ask for the Excelsior and get the Best.

The Excelsior is simple and durable. The *gearing* securely incased and will not clog. Has a *full roller*, without which no machine is perfect. A *ball ratchet*—"noiseless"—needs no oiling. Adjustable *wrought iron handle*. *Hangers* secured by bolts. The front rollers to these are adjustable, to vary the hight of cut. *Open balance wiper*—with *steel knives*—the only practicable means of securing strength and ease of draught. *Patent iron handle*, with attachment on each side of the machine—avoids the serious annoyance of a single wooden handle. The **Excelsior Lawn Mower** having been before the public for four years, and subjected to the most severe tests, the manufacturers feel warranted in asserting that for SUPERIORITY in *simplicity of construction* and *durability* it has no equal. It is *important* in either *Horse* or *Hand Lawn Mowers*, that their design should combine the *greatest strength* with least amount of *metal*; we therefore use only the very *best material*, together with *good workmanship*, enabling us to produce *Lawn Mowers* light *in weight*, of *easy draught*, and at a price within the reach of all.

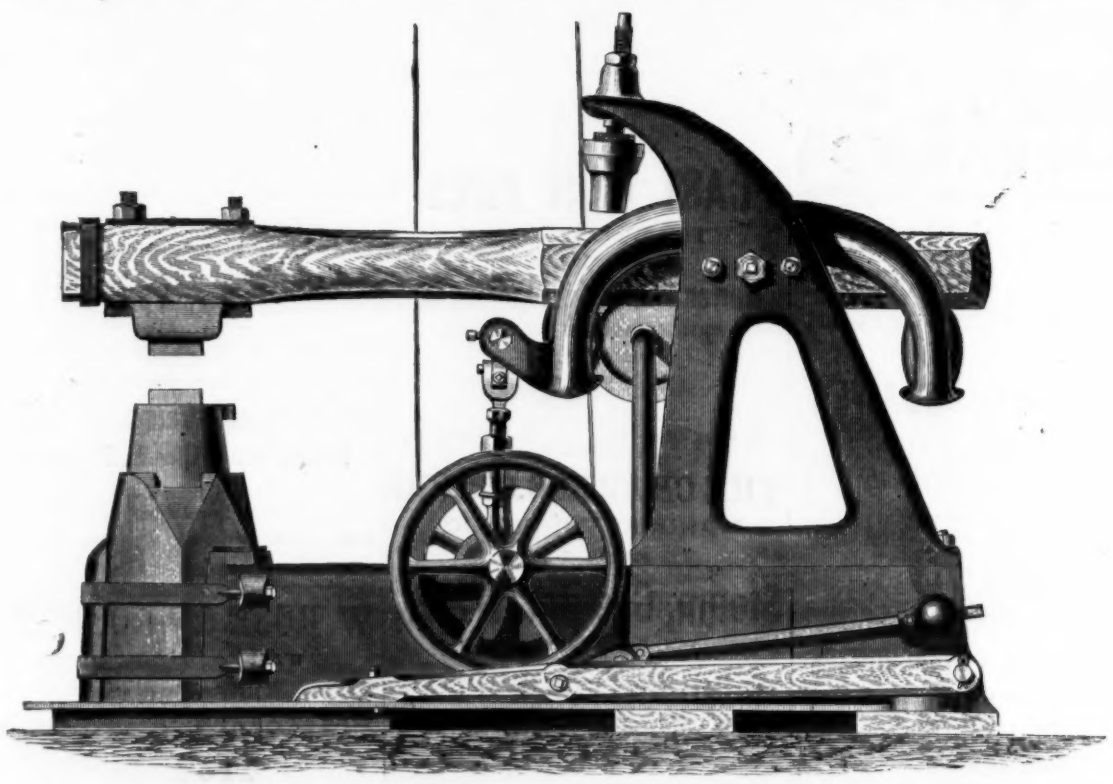
The Excelsior has received the most favorable commendation from all, and the advantages claimed for it over other machines are fully appreciated wherever it is known. To this we add numerous testimonials, but the fact that our sales have greatly increased year by year, is the most convincing proof of its adaptation to the wants of the public.

GRAND SILVER MEDALS AWARDED THE EXCELSIORS AT THE

New England Fair, held at Lowell, Mass., Sept., 1871 and 1872; New Jersey State Fair, held at Waverly, N. J., Sept., 1871 and 1872; the first premium at the New York State Fair, 1871; Western New York Fair, 1871; Ohio State Fair, 1871 and 1872; Northern Ohio Fair, 1871 and 1872; Michigan State Fair, 1871 and 1872; Indiana State Fair, 1871; Wisconsin State Fair, 1871 and 1872; Tennessee State Fair, 1871; Virginia State Fair, 1871; South Carolina State Fair, 1871.

For description of Mowers, and particulars, send for catalogue. Agents wanted. A liberal discount to the trade.

BRADLEY'S CUSHIONED HAMMER.



This Hammer is a great improvement over the old style of helve hammers. It is all made of Iron and Steel except the helve and cushions. It is portable, takes up but little room, and makes no noise except the stroke of the hammer. It takes less power to drive it, and it turns out more and better work. The helve is nicely balanced upon two adjustable hardened steel centers, and there is no bind or friction connected with its action. It will endure more hardships at less expense for repairs, and, consequently, outlasts any other. Its capacity is greatly increased, but not at the expense of its size, convenience or durability It strikes a more accurate, forcible and elastic blow than any other hammer. It is being used and is peculiarly adapted for the exceeding difficult work of swedging cotton spindles; no other hammer has been able to do this work as perfectly and economically. It is the favorite of every hammersman; it promptly obeys his every touch, and he soon regards it as a thing of life. *We warrant them as recommended*, and refer you to the following parties now using them:

W. H. Haskell & Co., Pawtucket, R. I.
Cole Brothers, Pawtucket, R. I.
American File Co., Pawtucket, R. I.
Fales, Jenks & Son, Pawtucket, R. I.
Providence Tool Co., Providence, R. I.
Nicholson File Co., Providence, R. I.
Woonsocket Iron Foundry, Woonsocket, R. I.
John Berkenhead, Mansfield, Mass.
Steele & Condict, Jersey City, N.
Silsby Mfg. Co., Seneca Falls, N. Y
Cowing & Co., Seneca Falls, N. Y.
Rumsey & Co., Seneca Falls, N. Y.
Clapp, Fitch & Co., Auburn, N. Y.
Sweet, Barnes & Co., Syracuse, N. Y.
Warder, Mitchell & Co., Springfield, O.
Robert Doyle, Watseca, Ill.
Furst & Bradley Mfg. Co., Chicago, Ill.
Chicago Plow Co., Chicago, Ill.
Mark H. Richards, Pottstown, Pa.
Peters Bros. Mfg. Co., Marshall, Mich.
Studebaker Bros. Mfg. Co., South Bend, Ind.

For particulars address

BRADLEY MFG. CO., Syracuse, N. Y.

SEND TO THE

NEW YORK ENAMEL PAINT COMPANY. TRADE MARK. VERY FINE HIS OWN PAINTER

FOR SAMPLE CARDS.

Our Paint is made of the very best material known to painters, viz: White Lead, Zinc and Linseed Oil, chemically combined, and is superior to any paint known to the trade. The advantages being that

It is ready for use.
It is applied with less labor.
It shows a beautiful enamel surface.
It does not chalk or peel off.
It does not run from nail holes or corners.
It is fire proof and water proof.
It covers old work as well as new.
It is the best paint for iron buildings.
It is equal to any for covering brick.
It is a perfect wood preservative.
Rain, before dry, does not wash it.
It is durable, retaining its enamel and freshness.

☞ Sold by the Gallon only, in Cans or Barrels.

Office, 43 Chambers St., N. Y.

Cornell Lead Co.,

Cor. Delaware and Virginia Streets. BUFFALO, N.Y

S. G. CORNELL & SON WARRANTED PERFECTLY PURE WHITE LEAD BUFFALO, N.Y.

TRADE MARK.

Manufacturers

WHITE LEAD Dry and in Oil,

Lead Pipe, Sheet and Bar Lead.

S. G. CORNELL, Prest. A. P. THOMPSON, Vice-Prest.
S. DOUGLAS CORNELL, Secy.

White Lead, &c.

THE UNION WHITE LEAD MANUFACTURING COMPANY. PURE

Union White Lead Mfg. Company,
26 Burling Slip, New York.,
B. W. How, Secretary. James How, President.
MANUFACTURERS OF
White Lead, Red Lead, Litharge, Orange Mineral.

Brooklyn White Lead Co.

BROOKLYN WHITE LEAD CO., INCORPORATED 1868. SUPERIOR, PURITY, DURABILITY AND COLOR.

ADDITIONAL TRADE MARK. We caution consumers against the numerous spurious brands, in imitation of ours, of adulterated and greatly inferior qualities—which are sold as our LEAD. $50 Reward for detection of counterfeits. BROOKLYN WHITE LEAD CO. PREMIUM LEAD WARRANTED PURE. F. HOWE, Tr. Office, No. 89 Malden Lane, NEW YORK.

TRADE MARK.

White Lead, Red Lead and Litharge.
89 Malden Lane, NEW YORK.
FISHER HOWE, Treas.

JOHN JEWETT & SONS

Manufacturers of the well known Brand of

WHITE LEAD.

JEWETT & SONS' PERFECTLY PURE WHITE LEAD.

TRADE MARK.

Also Manufacturers of

LINSEED OIL
AND FLOOR OIL CLOTHS,
182 Front Street, NEW YORK.

ATLANTIC WHITE LEAD CO. ROBERT COLGATE & CO. PURE. WARRANTED

TRADE MARK.

The Atlantic White Lead and Linseed Oil Company,

MANUFACTURERS OF

White Lead (Atlantic), Red Lead Litharge & Linseed Oil.

ROBERT COLGATE & CO.,
287 Pearl Street, New York

John T. Lewis & Bros.,

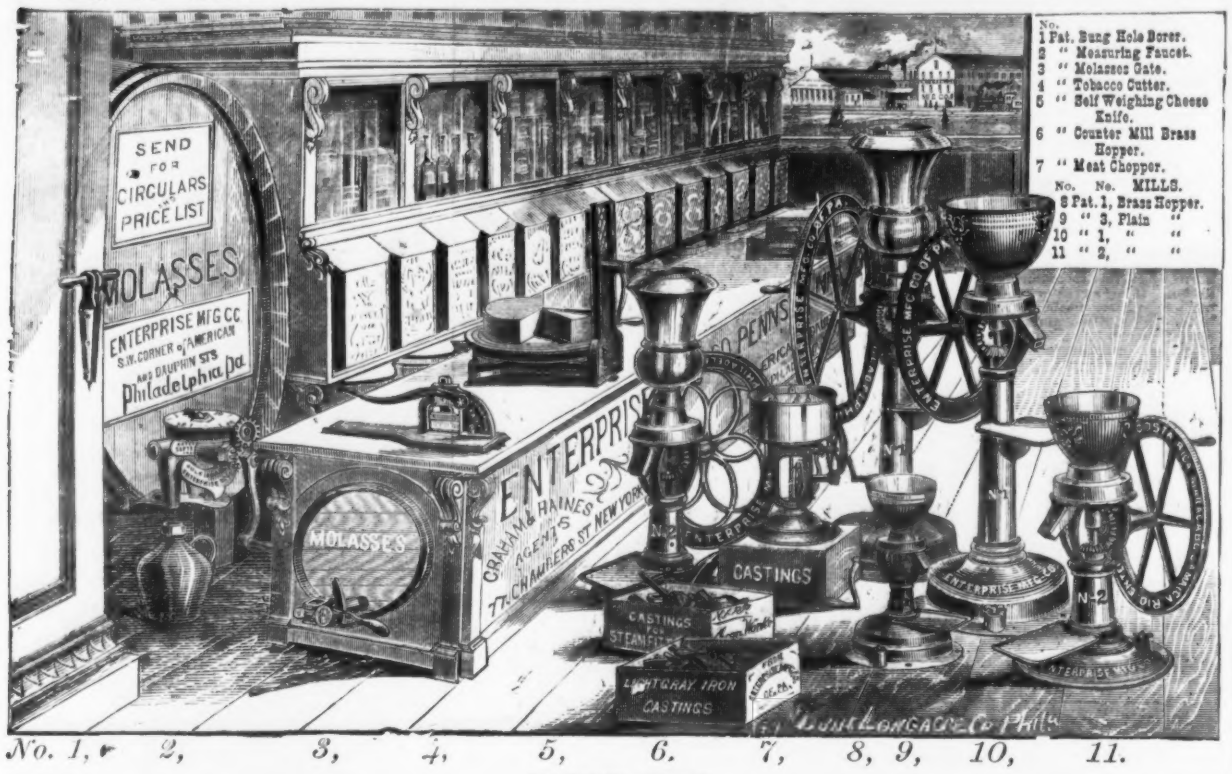
No. 231 South Front St.,
PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.

MANUFACTURERS OF

PURE WHITE LEAD, RED LEAD Litharge, Orange Mineral, Linseed Oil
AND PAINTERS' COLORS.


No.
1 Pat. Bung Hole Borer.
2 " Measuring Faucet.
3 " Molasses Gate.
4 " Tobacco Cutter.
5 " Self Weighing Cheese Knife.
6 " Counter Mill Brass Hopper.
7 " Meat Chopper.
No. No. MILLS.
8 Pat. 1, Brass Hopper.
9 " 3, Plain "
10 " 1, " "
11 " 2, " "
SEND FOR CIRCULARS & PRICE LIST
MOLASSES
ENTERPRISE MFG CO
S.W. CORNER of AMERICAN AND DAUPHIN STS
Philadelphia, Pa.
ENTERPRISE
GRAHAM & HAINES AGENTS 77 CHAMBERS ST NEW YORK
CASTINGS
CASTINGS FOR STEAMERS
LIGHT GRAY IRON CASTINGS
No. 1, 2, 3, 4, 5, 6. 7, 8, 9, 10, 11.

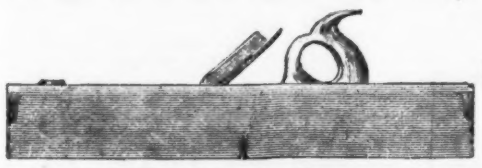
FOR PRICES ADDRESS

ENTERPRISE MFG. CO., of Pa., HARDWARE MANUFACTURERS, W. Cor. of American and Dauphin Sts., PHILADELPHIA. or **GRAHAM & HAINES, Agents,** 88 Chambers St., New York.

SANDUSKY TOOL CO.,

MANUFACTURERS OF

Planes, Plane Irons, Carpenters', Cabinet Makers' and Coopers' Tools,



Bench, Hand and Tail Screws, and Chisel, File and Auger Handles.

SANDUSKY TOOL CO., Sandusky, Ohio, or GRAHAM & HAINES, 88 Chambers Street, N. Y.

Headquarters for

Henry Disston & Sons' Saws,

Hand, Mill, Circular and Cross Cut.

ALSO,

Plumbs and Levels, Try Squares, Gauges, Trowels and Barker's Reversible Butt.

A full assortment constantly on hand. Address orders to

GRAHAM & HAINES, 88 Chambers Street, N. Y.

Samuel Loring's Tacks and Rivets.

Warehouse, 88 Chambers Street, New York.

A full assortment of

TACKS (all kinds), BRADS, TRUNK, CLOUT, HUNGARIAN and FINISHING NAILS.

Also, BLACK and TINNED RIVETS always on hand for immediate delivery, if required.

GRAHAM & HAINES, 88 Chambers Street, New York, Agents.

Philadelphia Tool Co.,

MANUFACTURERS OF

Davis' Patent Duplex Wrench,

A tool well made of **Best Materials**, combining all the good qualities of a regular Nu Wrench of equal size with that of at least six pairs of Pipe Tongs. For circulars and price lists, address,

PHILADELPHIA TOOL Co., Office & Works, S. W. cor. 13th & Buttonwood Streets, Phila., Or *GRAHAM & HAINES, Agents, 88 Chambers Street N. Y.*

SMITH, BURNS & CO.,

Manufacturers of

Galvanized and Japanned Sheet Iron Goods and Tin Ware.

Coal Hods. Patent Stamped Corrugated Riveted Bottom.
Fry Pans. "Excelsior" Polished.
Excelsior Broiler. Best and Cheapest in the market.
Combined Chamber and Commode Pail,
Ash Cans, Galvanized and Japanned,
Galvanized Water Pails, Well Buckets,
Chamber Pails, Tea Kettles, &c., &c.
Toilet Sets. Fancy and Grained.
Chamber Pails, Slop Pails, Foot Tubs, Baths, Water Carriers, Coolers, &c., &c.
Stamped and Piece Dish Pans and Plain Tin Ware.

Send for Illustrated Catalogue.

Warehouse, 45 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

HOWE'S Patent Family Glue Pot.

The Pot and Cup are made of Cast Iron, like the ordinary Glue Pot, with a cover and serviceable brush. It is altogether the best of the cheap Glue Pots in the market, being in everything except size exactly the same as those used by mechanics. From the large sales in the past, we are convinced that it supplies a necessity long felt where Glue is required—in the family, store, bank and office. The Glue is prepared in a manner to prevent all decay or mould. It is always ready for use, and will save many dollars. They are packed half a dozen in a box, and twelve boxes in a case. Price, per doz. $5, with a liberal discount to the trade.

Orders should be addressed to the manufacturers

The J. & E. Stevens Co., Cromwell, Conn.,

Or to the sole agents

Graham & Haines, 88 Chambers St., N. Y.

CAUTION.

BUY ONLY THE

GENUINE FAIRBANKS SCALES,

Manufactured by

E. & T. FAIRBANKS & CO.

Standard Scales.

Stock Scales, Coal Scales, Hay Scales, Dairy Scales, Counter Scales, &c.

Scales repaired Promptly and Reasonably.

For sale, also, Troemner's Coffee and Drug Mills, Composition Bells, all sizes Letter Presses, &c., &c.

THE MOST PERFECT

ALARM CASH DRAWER.

MILES ALARM TILL CO.'S

EVERY MERCHANT SHOULD Use them.

EVERY DRAWER Warranted.

SOLD AT

FAIRBANKS' SCALE WAREHOUSES,

FAIRBANKS & CO.,

311 Broadway, N. Y.; 93 Main St., Buffalo, N. Y.
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Fairbanks, Brown & Co.,
118 Milk Street, Boston.

For sale by leading Hardware Dealers.

Fire Department Supplies.

Hotels, Mills, Public Buildings, &c., furnished with *Hose, Iron Piping, Hydrants* and all kinds of *Fire Supplies.*

HOSE of every description.

Rubber and Brass Discharge Pipes,
Hats, Caps, Belts, Buckets, Trumpets, Axes,
Hose and Ladder Straps, Spanners, &c

Patent SCREW and RING COUPLING and SPRAY NOZZLE.

Send for Price List.

ALBERT F. ALLEN, Providence, R. I

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS

For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

PLUMBERS' MATERIALS.

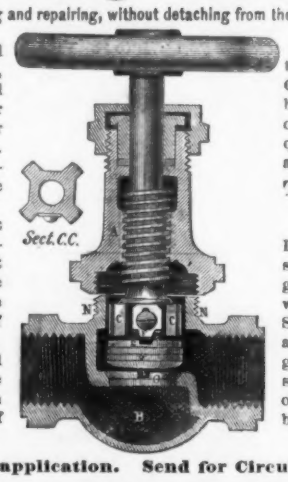
Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street, N. Y.

POWELL'S PATENT

Self-Adjusting Globe Valve.

Adapted for Re-grinding and repairing, without detaching from their position while in use.



These Valves are so constructed that the working gear of an ANGLE, GLOBE or CHECK can be all changed or transposed from one to the other without in the least affecting their qualities as a STEAM TIGHT VALVE. We venture to assert that this cannot be said of any other Globe Valve in existence.

It is the only LOOSE DISC VALVE that can be re-ground without separating the Disc from the Stem. It is the only Re-grinding Valve whose valve stem is adapted to be guided to seat, without the aid of an additional piece.

The Stuffing Box can be packed with a full head of steam on the Valve, whether it be closed or open to its fullest extent. The Screw of the Nut which connects it to the Globe is so completely protected by the steam tight joint at the top of the neck, that no cement is required, and it can be unscrewed at any time without difficulty.

TO RE-GRIND THE VALVE

It will be seen that it is only necessary to release the slotted pin F, by giving a half turn to the screw which confines it—drop into the Slot S of the valve, as seen in cut, and fasten it there. When the grinding is accomplished, the slotted pin is withdrawn to its original position and fastened, to be used again when necessary.

Sample Valve sent on application. Send for Circular and Price List.

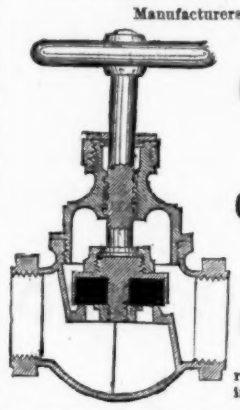
PANCOAST & MAULE,

227 Pear Street, PHILADELPHIA.

Nelson, Finkel & Co.,

439 East 10th St., New York,

Manufacturers of



Jenkins' Patent **Compression Valves** AND **Gauge Cocks**

Also,

Nelson's Patent **LUBRICATOR.**

Warranted the most reliable and durable in the country.

CAST IRON PIPES

FOR WATER AND GAS.

Branches Retorts, &c.

Warren Foundry & Machine Co.,

PHILLIPSBURG, NEW JERSEY.

Chas. Gregg Stearns, Pres. A. F. Weaver, Treas.
Geo. Watson, Sec.

THE CHARLES GREGG MANUFACTURING CO.

FITTINGS FOR

Steam, Gas and Water,

PLAIN AND GALVANIZED

WROUGHT IRON PIPE,

Nos. 62 & 64 Gold Street,

NEW YORK.

Business Established, 1836. Incorporated, 1873

GRAFF TUBE WORKS.

WILLIAM GRAFF & CO.,

Manufacturers of Plain and Galvanized

Wrought Iron Pipe

For

Gas, Steam, Water, Oil, &c.,

No. 140 First Ave., PITTSBURGH, PA.

Pipe of any Size, Length or Thickness furnished to order.

EATON & COLE.

Manufacturers of

Wrought Iron Pipe Fittings,

Sole Agency for the East.

BRASS VALVES, COCKS, TOOLS, &C.,

58 John Street, NEW YORK.

Agents for the Pacific Coast for

Regester's Patent Gauge Cocks,

CONROY, O'CONNOR & CO.,

San Francisco, Cal.

Industrial Tube Works.

ISAAC J. GRIFFITHS & BROS.

Manufacturers of

Wrought Iron & Galvanized Tubes

For Gas, Steam and Water.

Brass and Iron Valves, Cocks,

Cast and Malleable Iron Fittings.

Tubes cut and fitted to plans and specifications.

1529, 1531, 1533 & 1535 South 7th St., PHILADELPHIA.

WM. S. CARR & CO.

Sole Manufacturers of

Carr's Patent Plumbers' Goods,

Pumps, Water Closets, Fountains, Vases, &c.

OFFICE AND WAREROOMS,

106, 108 & 110 Centre Street,

Factory, Mott Haven, New York.

W. ROSE & BROTHERS

WEST PHILADELPHIA,

Manufacturers of

Plasterers' and Brick Trowels,

Hammers and Chisels.

ALSO,

Saddlers' Round Knives, etc.,

N. E. cor. 36th & Filbert Sts.

Please send for Price List.

PHILADELPHIA.

(Corrected weekly by Loyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days' interest added at 10 per cent. per annum.

ANVILS.

Solid Cast Steel ₱ lb 12½c
Peter Wright's ₱ lb, gold, 12½c
Wilkinson's 11½c
Eagle, ₱ lb 11 cents, currency dis 15%

APPLE PARERS.

Reading, Turn Table } per doz $8 50
Union per doz 8 00

AXES.

Mann's Light Per doz. $13 00@14 00
Hunt's, Light $14 00@14 50
Red Indian, all sizes $13 00@13 50
Red Chieftian " $18 50@14 00
Crown Prince $14 00@14 50

AUGERS AND AUGER BITS.

Pierce's Patent Twist Bits dis 20@20&5%
Bates' & Ives' Bits dis 20&10%
Douglass' Bits dis 30%
Cook's Bits dis 25&10%
Bonney's Pat. Hollow Augers dis 25%
Russell Jennings' Bits dis 10%
Bates' & Ives' Nut Augers dis 20&10%
Douglas Nut Augers dis 30%
Watrous' Ship Augers dis 10%

BALANCES.

Landers, Frary & Clark's dis 10@15%
Chatillon's dis 10@15%
Morton's dis 10@15%
Common Spring, with Hook ₱ doz $1 38@2 00

BELLS.

Bevin Bros. Mfg. Co. Hand Bells dis 50%
Extra Light Hand Bells dis 50&10%
Other makers, light dis 50&10%
Connell's Door Bells old list net
Western and Kentucky dis 50%

BORING MACHINES.

Bates' Mfg. Co., complete with augers dis 10@15%
Douglas' " " " dis 10@15%
Common No. Augers $4 25@4 00
Angular, Extra, No. Auger 5 50@5 00

BOLTS.

Eastern Carriage Bolts dis 60&20%
Western " " dis 60&20%
Philadelphia CarriageBolts dis 40%
Wrought Shutter Bolts dis 35&10%
Cast " " dis 35%

BRACES.

Barber's dis 30&10@40%
Bartholomew's dis 10@15%
Spoffard dis 37½%

BUTTS.

Cast Fast Joint, Narrow dis 15%
" " Broad dis 30%
Cast Loose Joint dis 40%
" Acorn Drilled dis 25&10%
Wrought Loose Pin dis 20%
" Table & Back Flaps dis 5%
" Narrow dis 10%
" Loose Joint dis 25%
Parker's Blind Butts dis 30%
Shepard's " " dis 30%
Clark's " " dis 30%
Lull & Porter's " dis 25@25&5%
Palmer's " dis 30@30&5%
Garretsons' " dis 40%

CHAINS

German Halter, new gold list @ dis 10%
" Coil new gold list @ dis 10%
Galvanized Pump ₱ lb 15c
English Coil, less than cask add ½c. ₱ lb
Common Chain, ½c. ₱ lb less.
Best Proof Coil Chain—
₱ lb.... 14½ 11¾ 10½ 10 9¾ 9½ 9c gold
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ in.
By the cask, 560 lbs., discount ½c per lb. Common Chain, ½c per lb. less than proof.

CHISELS.

Socket Framing dis 60@60&5%
Socket Firmer dis 60@60&5%
Tang Firmer dis 40@40&5%
Beaty's Framing and Firmer dis 10@10&5%

CASTERS.

Porcelain Wheel dis 20&10%
Iron dis 20&10%
Brass dis 20&10%

CLOTHES WRINGERS.

Reliance advanced March 7 per doz $72 00
Crown " " 7 " " 72 00
Monitor " " 7 " " 72 00
Universal " " 7 " " 72 00
Novelty " " 7 " " 72 00
In 5 dozen lots assorted, at one time $70 00 per doz.

COFFEE MILLS.

Common Box and Side advanced April 1872 dis 15%
Patent " " " dis 10%

CUTLERY.

American Pocket (best) dis 20@25%
Landers, Frary & Clark, J. Russell & Co., and Lamson & Goodnow Mfg. Co. Manufacturers' net prices

DRAWING KNIVES.

Hart Mfg. Co.'s dis 60@60&5%
Concave Adjustable Handle dis 10%
Beatly dis 10%

FILES.

Nicholson Mill Files new list, $5 00 to £ cur
" Bastard " " 5 00 to £ cur
" Taper " " 5 00 to £ cur
Butcher's Mill .5 75 to £ gold
" Bastard .5 50 to £ gold
" Taper .5 50 to £ gold

FLUTING MACHINES.

Royal, No. 1, 4½ inch Rollers list $6 00
" No. 2, 6 inch Rollers list 7 00

HAMMERS AND HATCHETS.

Yerkes & Plumb's dis 5@10%
Hammond & Son's dis 5@10%

HINGES.

Strap and T dis 15%
Bonney's No. 1 Gate dis 25%
" No. 2 & 3 dis 35%

HORSE NAILS.

	Nos. 6	7	8	9	10
Ausable Horse Nails	27	25	24	23	22
Globe " "	29	26	25	24	23
Brundage " "	26	24	23	22	21
	Nos. 5	6	7	8	9	10
Putnam " "	32	28	26	25	24	23

On Ausable Globe & Brundage 1000 lb lots dis 5%

KNOBS.

Door (regular manufacture) dis 40%
Rim and Mortise dis 40%
Porcelain and Mineral dis 40%

LOCKS AND LATCHES.

Rim and Mortise dis 40%
Till and Cupboard dis 25%
American Padlocks dis 40%
Trunk Locks dis 5@10%
Thumb and Roggens Latches net @ dis 10%

MATTOCKS.

Long and Short Cutter dis 10%
Western Pattern dis 10%
Pennsylvania Pattern dis 10%

MOLASSES GATES.

Enterprise Mfg. Co.'s Measuring Faucets dis 20%
Stebbins' Gates dis 50&10%
Lincoln's " dis 40@40&10%
Landers, Frary & Clark's, Petroleum dis 10@10&10%
Taylor's Petroleum Faucets dis 20@20&10%

RAKES.

Cast Steel Garden dis 30%
Malleable " dis 33⅓%
Wood Head Iron Teeth dis 30@40%

RULES.

Rules dis 60%

SQUARES.

Steel Squares, new list dis 50%
Iron " " dis 50%

SAWS.

Disston's Cross Cut dis 12½%
Disston's Hand uts 7½%
Wm. McNiece's Hand, Cross-Cut and Circular, new list dis 15%
Boynton's Lightning, new list dis 30%

SHOVELS AND SPADES.

Rowland's Plain Back, list Feb. 1873 dis 20%
" Back Strap " " " dis 20%
Oliver Ames & Sons, advanced April 8 net list
Brady Shovel Co dis 7½%

SAD IRONS.

Reading (planed face) per lb. 5½c.
Coquanock (polished face) " 5c.

STOVE POLISH.

Gem per gross $5 00
Onyx " $5 00

SCYTHES.

Golden Clipper ₱ doz $11 50
Clipper No. 10 " 10 50
Common Scythes ₱ doz $7 00@10 00

SCREWS.

Iron (list Mar 6) dis 50%
Brass (Brass Screw list) dis 40%

SPOONS.

Plated Spoons, Rogers Bros.' dis 25@25&5%
Britannia, Parker's and Boardman's dis 25@25&10%
German Silver list net
" " Light dis 5%

TRY SQUARES.

Stanley Rule & Level Co dis 40%
Disston's dis 12½%
Stanley or Thrall dis 40@40&10%

TACKS, CLOUT AND FINISHING NAILS.

Half Weight Tacks dis 70%
" " by case dis 70&7½%
Clout and Finishing Nails 7½%
" " by the case dis 7½%

TRAPS.

Genuine Oneida—Newhouse list dis 20%
Imitation " " " dis 20&10%

WRENCHES.

Coes Genuine dis 30%
Coes Imitation Wrought Bar dis 40%
" " Malleable Bar dis 50%
" Pattern Malleable Bar dis 50%
Tafts Wrought Bar 60%
Tafts Malleable Bar 65%

WIRE.

No. 0 to 18 dis 20@22½%
No. 19 to 26 dis 27½@30%
No. 27 to 36 dis 33⅓@35%
Coppered 0 to 12 dis 15@20%
Tinned Broom Wire dis 15%
Bradlee & Co., Office Nos. 19 & 21 South Fourth st., Philadelphia. Price list of Proved and Warranted Chains. Discount ¾c. per lb.

SHORT LINK CHAIN.

Size. Inches.	Average Wt. Per Fathom. Lbs.	Proof. Tons.	Price Cts. Per Lb.
⅛	15	4	10½
9-16	19	5	10
5-8	25	6	9½
11-16	30	8	9·3
¾	35	10	8¾
13-16	40	12	8⅝
⅞	47	14	8½
15-16	54	16	8⅜
1	60	18	8¼
1 1-16	67	20	8⅛
1⅛	74	23	8
1 3-16	82	26	7⅞
1¼	90	28	7¾

All larger sizes same price as 1¼ inch.
Stud Chain 2½c. less than same size close link.

PITTSBURGH.

From the Pittsburgh Commercial.

FLAT BAR.

1¼ to 4 by ⅜ to 1 inch 4·6c
4¼ to 6 by ⅜ to 1 inch 4·8c
1¾ to 6 by 1⅛ to 1½ inch 5·0c
1¼ and 1⅜ by ⅜ to ¾ inch 4·8c
1 and 1¼ by ⅜ to ¾ inch 4·9c
⅝, ¾ and ⅞ by ⅜ to ½ 5·0c

HORSE SHOE.

All sizes 6·1c
Nail rods 8 5c

HEAVY BANDS.

3½ to 6 by ¾ and 5-16 inch 5·2c
1½ to 3¼ by ¾ and 5-16 inch 5·3c
⅞ to 1½ by ¾ and 5-16 inch 5·6c
⅛ to ¾ by ¼ and 5-16 inch 5·8c

LIGHT BANDS.

3 to 6 by 3-16 to No. 12 5·6c
1¼ to 2¾ by 3-16 to No. 12 5·8c
1 to 1¾ by 3-16 to No. 12 6 2c
⅛ to ⅞ by 3-16 to No. 12 6·8c

HOOPS.

2¼ to 3 inch 5·9c
3¼ to 4¾ inch 6·1c
1¾ to 2 inch 6·1c
1¾ to 1 11-16 inch 6·4c
1½ and 1¾ inch 6·7c
1 inch 7·1c
⅞ inch 7·6c
¾ inch 8·1c
⅝ inch 8·6c
½ inch 9·1c

ROUND AND SQUARE.

1 to 1¾ inch 4·6c
2 to 2¾ inch 4·9c
3 to 3¾ inch 5·1c
3¼ to 4 inch 5·6c
⅞ to 9-16 inch 5·0c
½ to 7-16 inch 5·3c
⅜ inch 5·4c
5-16 inch 5·8c
¼ inch 6·2c
3-16 inch 8·2c

OVAL IRON.

⅞ to 1¼ inch 5·2c
⅝ to ¾ inch 5·4c
½ inch 5·6c
⅜ inch 6·2c

HALF OVAL AND HALF ROUND.

⅞ to 1¼ inch 5·5c
⅝ to ¾ inch 6·0c
½ inch 6·7c
⅜ inch 8·2c

	Boiled.	Chare'l.	Juniata.
Sheet Iron, 10 to 14	6·2	7·7	9·2
" " 15 to 20	6·4	7·9	9·4
" " 21 to 24	6·6	8·1	9·6
" " 25 to 26	6·8	8·3	9·8
" " 27	7·0	8·5	10·0

All sects over 28 in. wide, ¼c. ₱ lb extra.

TANK IRON.

3-16, ¼ and ⅝ inches thick 6·0
Boiler Plate Iron 7·9
Heads not flanging 7·1
Heads flanging 8·9
Plow Slabs 6·8
Plow Wings 7·3

RAILROAD IRON—COUNTERSUNK AND PUNCHED.

1¼ by ⅝, 7-16 and ½ inch 5·6
1¼ by ¾ and 5-16 inch 6·1
1¼, 1¾ and 2 by ⅝ and ⅝ inch 5·1
1¼ by ¾ inch 5·3

EXTRAS FOR CUTTING TO LENGTH.

Flat bars and rounds and squares 1c
Flat bars for tire 1c
Heavy bands 3c
Light bands and wagon box iron 4c
Hoops 5cc

TERMS.

Note or acceptance at sixty days, with currant rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within fifteen days of date of invoice. Payment to be made in New Bork exchange, United States Treasury notes, or their equivalent. No discount on bills of less than $50.

Heavy Hardware.

The following are the card rates of Lewis, Oliver & Phillips:

Iron, standard list, assorted sizes, for large orders, 4·6c, card rate, 2 % off net.
Iron wedges 6½c ₱ lb net
Norway Nail rods 9½c ₱ lb net
Fence Pickets—
⅜ round, bent to shape .35c ₱ ft. fence, less 5%
Discount off Standard List.
Carriage and tire bolts, .60% & 10%
Plow blots 20% off net
Stove bolts list net
Machine and square head bolts new list 20% off net
Coach and lag screws, new list 20% off net
Bolt Ends, new list 20% off net
Square and hexagon nuts and washers, new list 4c ₱ lb off net
Washers new list, 4c ₱ lb off
1c. ₱ lb extra for less than 1 keg of each size.
Harrow teeth, in lots of 1 ton or more, 1 in. diam 5¼c; ¾ & ⅞ in. diam. 5¾c; ⅝ in. diam. 5½c ₱ lb.
Patent Headed Harrow Teeth, packed in casks ½c extra ₱ lb net.
Skein bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 9c; 9-16 in. diam. 10c; ½ in. diam. 11c.
1c. ₱ lb extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinge, ¾ to 1 in. diam. 10¼c; ⅝ in. diam. 11¼c; ½ in. diam. 13¼c ₱ lb, net.
Screw and Strap Hinges, in lots of 50 pairs or more, 14 to 36 in. long, 7¼c; 8, 10 and 12 in. long, 9c ₱ lb net.
Strap and T Hinges 15% net
6 months purchases over $1000, 5% dis. allowed.
Screw hitching rings $7 ₱ 100 net
Duck nest tuyere irons $16 50 ₱ doz. net
Cast iron washers .5c ₱ lb net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 feet long ₱ lb 5¼c
1 to 2 in. diam. from 4 to 8 feet long 6¼c
1 to 2 in. diam., from 1½ to 4 feet long 6¾c
⅝, ¾ and ⅞ in diam., over 4 feet long 7c
⅝, ¾ & ⅞ in diam., from 1½ to 4 feet long 7½c

WAGON HARDWARE.

Wagon Box Strap Bolts—
10 in. long by 7-16 at screw end, ₱ set of 8 bolts...55c
12 " ½ " ₱ " 8 " ...70c
12 " ½ " ₱ " 8 " $1 00
14 " ½ " ₱ " 8 " 1 10
16 " ⅝ " ₱ " 8 " 1 20
5 cts. ₱ set for each additional inch over 14 inch, by ⅝. All lengths made.
Wagon Box Rods, narrow track each 18c
Wagon Box Rods, wide track, each 20c
Single Tree Irons, per set of four pieces 38c
Wt. Iron Bolster Plates, 2¾ in. wide, per set:
" " 3 " " 65c
" " 3¼ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets 16½c each
" " finished with guard 45c each
Wrought rub irons 11c each
Wrought Hammer Straps, heavy pattern.. 16c each
" " " light pattern.. 13½c each
Stay Chain Hooks 8c each
" " " heavy each 12c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 set...20% dis.
Wagon Box Staples, 1½ to 2½ in. to clinch per 1000, $14 00 net
Wagon Box Staples, Box Iron, to rivet on, per 1000, $11 00 net
Neck Yoke Eyes, each 5¾c net
Neck Yoke Eyes, with ⅜ inch rings 8¼c net
King Bolts, ⅞, 1, 1⅛, and 1¼ in. diam. ₱ lb 5¾c
Wagon Rivets, ex. large, oval and steeple head, ¼ in. diam., all lengths, ₱ lb 11c
Wagon Rivet, 3-16 inch diam., all lengths 13c
Wagon Rivets & nails in 5 lb paper boxes, ₱ lb ex 1c
Wagon and Hinge Nails, ₱ lb net 17c
Coupling Plates, Double Tree Plates, Tongue Plates } 9½c ₱ lb net
Neck Yoke Plates ₱ lb 12c
Tongue Cap Iron, 1¾, 2 and 2¼ in. wide, same price ₱ lb as Band Iron.
Wagon Chains, Stay Lock and Tongue 5-16 in., 12½c; ¼ in., 14c.

Nails, Brads, Spikes, etc.

CUT NAIL LIST.

10d to 60d nails, fence, and brads $5 25
8d and 9d nails, fence and brads 5 50
6d and 7d nails, fence and brads 5 75
4d and 5d nails, fence and brads 6 00
3d nails, fence and brads 6 75
2d nails, fence and brads 8 00

FINE BLUED.

3d $8 00
2d 9 00

CASING.

10d to 30d 6 00
8d and 9d 6 25
6d and 7d 6 50

FINISHING.

10d to 50d 6 50
8d 6 75
6d 7 00
4d 7 25

CLINCH.

Clinch nails $7 00

CUT SPIKES.

3 to 6 inch $5 50

BARREL.

⅜ inch $9 00
⅜ inch 8 25
1 inch 7 75
1½ inch 7 00
1¾ inch 6 75
1⅞ inch 6 25
1½ inch 6 00

12½c ₱ keg off lots of 100 kegs and over.

TERMS.—Note or acceptance at sixty day's, with exchange on New York, or discount of two per cent. for cash, if remitted within ten days from date of invoice. Payments to be made in New York Exchange, United States Treasury notes, or their equivalent. No discount on bills of less amount than $50.

LENGTH OF NAILS.

2d, 1 inch; 3d, 1¼ inch; 4d, 1½ inch; 5d, 1¾ inch; 6d, 2 inch; 7d, 2¼ inch; 8d, 2½ inch; 9d, 2¾ inch; 10d, 3 inch; 12d, 3¼ inch; 16d, 3½ inch; 20d, 4 inch; 30d, 4½ inch; 40d, 5 inch; 50d, 5½ inch; 60d, 6 inch.

BOSTON.

Corrected by Fuller, Dana & Fitz, 110 North St., Boston, Importers and Commission Merchants.

Tin Plates.

I. C. Charcoal per box @ 14 00
" Coke " @ 12 75
" Terne " @ 12 75

Metals.

Pig Tin, Banca, gold per lb. 39c
" Straits, " " 33c
" English, " " 33c
Copper, Sheathing " 43c
" " yellow " 33c
Copper Bolt " 45c
" Braziers " 45c
" Ingot " 37c
" Old "
Lead, Spanish Pig, gold " 6½c
" Sheet and Pipe " 9·45c
" Old " 6¾c
Spelter, Silesian, gold " 8c
" American, " " 7c
Zinc, Sheet " 11c

Iron.

Sheet Iron, Russia, gold per lb. 18c
" English " 7c @ 7½c
" American " 8c
" Galvanized " 11c @ 13c
Swedes Bar Iron, Flat, gold per ton, $145 00 @ $155 00
" Shoe Shapes, " " 160 00 @
Norway Bar Iron, Flats, " " 145 00 @ 155 00
Norway Shapes, gold, per ton, 160 00 @
Norway R'd, 2 in. to ⅜ in. gld. pr. ton 150 00 @
" " 11-16 to ⅜ in. " 167 50 @
" " 5-16 to ¼ in. " 170 00 @
" Nail Rods, Roll'd " 187 50 @
" " U B. " 175 00 @
" " Benzon " 170 00 @
" " Vasa, " 165 00 @
" " N I W " 162 50 @
English Refined Bar Iron, " 105 00 @
Scotch Pig Iron, " 60 00 @ 65 00
American " " 45 00 @ 54 00
Wrought Scrap Iron, " 57 50 @ 60 00

Steel.

English Tool Steel, gold per lb. 16c.
" Machinery Steel, gold " 10c.
American Tool " " 16c.
" Machinery " " 11c.
Bessemer Steel 8½ @ 9½c
German " per lb. 10½c.
Spring Steel " 9c.
Tire " " 8c.
Sleigh Shoe Steel " 6¾c.
Toe Calk " " 8¾c.

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

March 24, 1873.

Axes, Chopping—Blood's $12 50 @ 14 50
Augers—C. S. cut dis 38%
Bits, Anger—Pierce's 25%
" Jennings' dis 10%
Bells, Cow—Yaw's Genuine 20%
Bells, Hand dis 50&10 @ 55&10%
Bellows—Smiths' dis 15 @ 20%
" Moulders' dis 10%
Bolts—Carriage and Tire, dia. neck dis 60 & 15%
Braces, Bit—Barber's dis 30 & 10%
Brads, Cut dis 50&7½%
Boards—Stove, Brooks' Patent, new list dis 30%
Buckets—Well per doz $6 00
Butts—Brass dis 25%
Cast Loose Joint dis 40%
" " Pin dis 30%
" " " Japanned dis 30%
" " " Silver Tipped dis 20%
Wrought Narrow dis 10%
" Broad, Loose Joint dis 15%
" Table and Back Flaps net
Belting—Rubber dis 30 @ 33⅓%
Leather, new list dis 30 @ 30 & 5%
Beaters, Egg, "Peerless" per doz $4 50
Brick—Bath (box of 2 doz) Best English $1 50
"Rutherford" $1 25
Bung Borers—"Enterprise" dis 10&10%
Chalk—White, Carpenter's per gross, 50c
Red, Carpenter's " " 75c
Blue, Carpenter's " " 85c
Crayon School " " 14c
Chisels—Firmer Socket dis 50&20 @ 50, 20&5%
Framing Socket dis 50&20 @ 50, 20&5%
Corner Socket dis 50&20 @ 50, 20&5%
Slick's Carpenters' dis 50&20 @ 50, 20&5%
Castings—Malleable ₱ lb, 10½c
Cutters, Meat—Hale's Patent dis 10%
Cherry Seeders per doz $9 00
Elbows—Corrugated 5 5½ 6 7 } dis 10%
Charcoal $4·25 5·25 5·25 6·50
Russia 10·00 13·00 13·00 14·00
Faucets—Wood, Cork Lined dis 50 @ 50&10%
Files—Wheeler, Madden & Clemson's dis 42½%
Freezers, Ice Cream—"Champion" dis 33⅓%
Gates—Molasses—
Patent Self-Measuring... ₱ doz. $43 00; dis 10&10%
Hinges—Window Blind—
Shepard's Standard, and Clark's dis 30%
Wrought Strap and T dis 15%
Hods, Coal—Plain, Black and Galvanized new list net
Funnel, Black and Galvanized new list net
Fancy and Helmet new list net
Hammers—Maydole's net
Yerkes & Plumb's dis 5 @ 10%
Hatchets—Blood's net @ 5%
Hooks and Staples—Wrought 50&10 @ 60%
Hooks—Belt dis 45&10%
Hasps and Staples—Wrought dis 50&10 @ 60%
Planes, Bench dis 15%
Sad Irons ₱ lb 5½c
Kettles—Brass ₱ lb. 52½c
Enameled new list dis 30%
Knives, Drawing—Oval No. 1 dis 50&20 @ 50, 20&5%
Razor Blade dis 37½&20 @ 37½, 20&5%
Lanterns "Peerless", No. 1 5 10
₱ doz $26 00 $12 50 $15 00 dis 10%
"Radiant" 75 100 150 175
₱ doz $13·13 13·13 22·50 22·50 dis 20%
Machines—Apple Paring, Turn Table } $8·50 ₱ doz
" " Lightning }
Tinmen's " 4 75
Doweling, Merchant's, No. 1 " 5 00
" " No. 2 "
Mills, Coffee—Box and Slide, common dis 10&5%
Box Union and Eagle dis 10%
Swift's Patent dis 10%
"Champion" dis 10&10%
Nails—Cut, Chesapeake $5 00 rates
Clout and Finishing dis 7½%
Shoe dis 7½%
Horse, Ausable No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " 1000 lbs dis 5%
" Clinton No. 6 7 8 9 10
23 21 20 19 18c
Packing—Rubber dis 30 @ 33⅓%
Pencils, Slate—Soapstone 4 5 6 in.
2040 50c. per 100
Case lots dis 20%
Paint—White Lead, U. S. Gov't ₱ lb 9½c
Rivets—Iron, Black and Tinned dis 20%
Copper dis 10%
Rope—Manila, ½ inch and larger ₱ lb 17½c
Rules—Boxwood and Ivory, Stephens dis 50&10%
Staples—Blind, Boardman's Pat., ½ & ⅝ ₱ lb 37c
Skates—White's dis 20%
Straps, Skate—Russet and Black net @ 20%
Spoons—Iron Tinned dis 10%
" " by the case dis 20%
Plated Rogers' A No. 1 dis 25&5%
Britannia dis 25 @ 25&10%
Squares—Steel and Iron new list 50%
Shoes, Horse—H. Burden & Sons ₱ keg $6 37½
Shovels & Spades—Shepard, Forsyth & Dennison 15%
Saws—Henry Disston & Sons dis 5%
Scales—Buffalo Scale Works dis 25%
Fairbanks dis 15%
Screws—National Screw Co. Iron dis 50%
Brass dis 40%
Shears—Seymour's dis 50%
Tools—Tinmen's
Traps, Steel—Newhouse dis 17½%
Tacks—Half Weight Am. Iron dis 70&7½%
Vises—Parallel, Buffalo dis 15%
Wrenches—Coes' genuine dis 30%
Coes' Imitation dis 50 & 10%
Tafts' Pattern dis 62½&10%
Ware—French, Tinned and Iron dis 20%
Stamped and Japanned net
Cast Iron Hollow dis 20@30%

METALS.

Tin Plates, Charcoal IC.

10x14 $14 25
12x12 14 75
12½x17 13 75
14x20 15 25
Add for each X 2 50
14x20 C. terne $12 75 @ 13 75
20x28 C. " 28 50
20x28 X. " 33 50
Pig Tin—Straits 42 @ 43c
Banca 49 @ 50c
Solder No. 1 No. 2 } 50 lbs. deduct ½c
24c 22c } 100 " " 1c
Sheet Zinc, "Lasalle," 1000 500 100 lb casks
$11 50 $11 60 $11 80 ₱ 100 lbs
Iron Wire—Bright and annealed dis 10 @ 20%
Coppered dis 5 @ 15%
Tinned dis 5 @ 15%
Tinned Broom, Nos. 20 21 22 } dis 20%
20c 21c 21c }
Copper—Sheathing 14@18 oz ₱ lb 43c
Planished ₱ lb 49 @ 51c
Bottoms ₱ lb 45c
Bolts ₱ lb 45c
Braziers' Sheets ₱ lb 45c
Sheet Iron—Smooth Finish Com'n Char. Jun
Nos. 10 to 14 6·85 8·35 10·05c
Nos. 15 to 20 7·35 8·75 10·25c
Nos. 21 to 24 7·55 8·95 10·45c
Nos. 25 & 26 7·75 9·15 10·65c
No. 27 7·95 9·35 10·85c
Am. Russia A. B.
15½c 13c
Gen. Russia, No. 1 stained 21c
" " " clean 22c
Galvanized dis 20%

CHICAGO.

Reported by Markley, Alling & Co.

AGRICULTURAL IMPLEMENTS.

Scythes.—Dunn Edge Tool Co dis 25%
Hay and Manure Forks.—Otsego extra C. S. dis 25%
Hoes & Garden Rakes.—Jackson and Otsego dis 25%
Scythe Stones dis 25%
Scythe and Bush Snathes dis 20%
Harvest Rakes and Barley Forks dis 20%
Revolving Horse Rakes dis 20%
Handles.—Fork and Shovel dis 20%
Cradles.—Nithington, Cooley & Co dis 20%
" Genuine Morgan ₱ doz net $36 00

AUGERS AND BITS.

Ives', extra C. S. dis 20%
Jenning's dis 5%
Cooks' dis 25%
Snell's dis 10%
Snell's Car Bits dis 10%

AXES.

Amoskeag Yankee ₱ doz $13 50
" Crescent " 14 00
Hunt's Yankee " 14 50
Kennebeck Yankee " 12 00
Lippincott " " 12 50
" Crown " 13 00
" Beveled " 13 00
Jafford's Silver Steel " 13 00
Red Warrior, Beveled " 14 00
Kennebeck, Handled " 15 00
Boy's, Handled " 12 00

BOLTS.

Carriage and Tire dis 50&20%
Cast Barrel and Shutter dis 20&10%
Wrought Iron Barrel add 10%
" " Square net list

BUTTS.

Cast Fast Joint, Narrow dis 10%
" " " Broad dis 20%
" Loose Joint dis 35%
" " Pin, Reversible dis 25%
" " Japanned dis 25%
" " Silver Tipped dis 25%
Wrought Narrow, Fast Joint net list
" Broad, Fast Joint dis 15%
" " Loose Joint dis 15%
" Loose Pin dis 15%
" Table net list
" Brass dis 15%
Garretson's Blind Butts, Wood doz sets $2 00
" " " Brick doz sets 3 00
Parker's " " Wood doz sets 2 25
" " " Brick doz sets 3 25

CASTERS.

Iron Plate dis 20%
Brass Wheel Plate dis 20%
Porcelain Wheel Plate dis 20%
" " Bed dis 20%
Iron Wheel Bed dis 20%

CHISELS.

Butcher's Tanged Firmer dis 30%
" Long Paring dis 30%
Witherby Socket Framing dis 50&15%
" " Firmer dis 50&15%
" " Corner dis 50&15%
" " Slicks dis 50&15%

COFFEE MILLS.

Box 4 Iron $ 3 75
" 103 " 5 25
" 102 " 7 50
" 107 Britannia 7 50
" 106 " 9 25
" 25 Union 11 00
" 35 " 13 00
" 75 Cast Steel 11 00
" 85 " 13 00
Side 50 4 75
" 60 5 75
" 70 7 25
" 90 18 00
" 15 Union 7 00
" 20 " 8 00

CUTLERY.

American Table dis 20%
" Pocket dis 25%

DOOR SPRINGS.

Torry ₱ doz $7 50
Rubber " 4 00
Boon's " 5 00

DRAWING KNIVES.

Witherby Tool Co dis 60&15%
Ohio Tool Co net list

FILES.

Butcher's $7 00 @
Nicholson's $5 00 @ $5 50 £

HAMMERS.

Maydole's net list
Yerks & Plumb net list
Cheney net list

HANDLES.

Extra Axe ₱ doz $3 00
No. 1 Axe " 2 25
No. 2 Axe " 2 00
R. R. Pick, No. 1 " 2 00
Coal " " " 2 00
Sledge, No. 1 " 2 00
Hatchet " 55
Hammer, A. E " 55

HATCHES.

Amoskeag Shingling, No. 1 ₱ doz $7 25
" No. 2 " 8 00
" No. 3 " 8 75
" Claw, No. 1 " 7 75
" " No. 2 " 8 50
" " No. 3 " 9 22
" Lath, No. 1 " 7 50
" " No. 2 " 8 25
" Solid Steel " 12 00

HINGES.

Strap and T dis 5%
Screw Hook and Strap, 8 to 12 in net, 10c ₱ lb
" " 14 to 24 in net, 9c ₱ lb
Hook and Eye Hinges net 12c @ 16c ₱ lb
Gate, No. 35, State ₱ doz $3 50
" No. 3, In and Out " 3 50
" Blinn's Pat " 7 50

HORSE NAILS.

Northwestern, 8d 24c
Ausable, 8d 24c
Globe, 8d 26c

KETTLES.

Brass net 54%
Enameled dis 15%

LOCKS AND KNOBS.

Norwalk Lock Co dis 25%
Branford " dis 25%
Eagle " dis 15%
American Pad Locks dis 25%
Continental Lock Co dis 10%

MEAT CUTTERS.

Haven's Patent net list
Hale's " dis 10%
Woodruff " net list
Stowe's Sausage Stuffers net list

MOLASSES GATES.

Stebbin's Patent dis 40%
Enterprise " dis 5%

NAILS.

10d to 60d per keg $5 25

OIL STONES.

Washita No. 1 net 35c ₱ lb
" Slips net 65c "
Hindostan No. 1 net 9c "
" Axe net 10c "
" Slips net 15c "

PICKS AND MATTOCKS.

Picks, Railroad, Axe Finish ₱ doz, $13 50
" Coal, Axe Finish " 10 00
Mattocks, L. C., Axe Finish " 16 50
" S. C., " " 16 00
Grub Hoes, Axe Finish, No. 2 " 12 00

PLANES.

Ohio Tool Co. Bench dis 10%
Sciota dis 15%
A. Howland & Co. Bench dis 10%
" " Fancy dis 10%
Bailey Patent Iron dis 15%
Plane Irons, Butcher's dis 30%

RIVETS.

Iron dis 10@15%
Tinned dis 10@15%
Copper, No. 7 net, ₱ lb, 60c

RULES.

Stanley Rule and Level Co dis 40&10%
Hubbard & Curtiss Mfg. Co dis 40&10%

SAD IRONS.

Best A No. 1 ₱ lb, net, 5½c
" Copper Face Star " 5¾c

SANDPAPER.

Wiggin & Stevens, No. 0 to 1½ ₱ ream, net, $4 3
" No. 2 to 3 " 5 0

SASH LOCKS.

Champion ₱ gross, net, $12 0
Hopkins & Dickinson dis 10%
Judd's Patent dis 10%
Corbin's Patent dis 10%
Clark's " dis 20%

SAWS.

H. Disston & Sons dis 5%
Champion X Cut ₱ foot, net, 60c
M. A. & Co. X Cut " 50c

SCREWS.

American Screw Co.—Iron d 45&5%
" " —Brass dis 25%
" " —Blued Rd. Hea dis 25%

SHOVELS AND SPADES.

Ames' Black Shovels ₱ doz $15 00
" Polished " " 16 00
" Patent " " 18 00
Alling " " 5 00
" " Molders' 18 00
Crane's Black " 12 00
" Polished " 13 00
Smith's " " B. S. L. H. Rd. Pt. 13 50
" " B. S. D. H. Rd. Pt. 14 00
Ames' Black Spades " 16 50
" Polished " " 17 50
" Patent " " 18 00
Alling " " 15 50
Crane's Black " " 12 50
" Polish'd " " 13 50

SCOOPS.

Alling Steel Polished, No. 2 ₱ doz, $14 00
" " No. 3 " 14 50
" " No. 4 " 15 00
" " No. 5 " 16 00
" " No. 6 " 17 00
" " No. 7 " 18 00
" " No. 8 " 19 00
" " No. 10 " 22 00
Crane's Polished, No. 5 " 14 00
" " No. 6 " 15 00
" " No. 7 " 16 00
" " No. 8 " 17 00
Crane's Black Coal, No. 4 " 18 00
" " No. 5 " 18 50
Preston, Black Scoops No. 1 ₱ doz $12 00
" " " 2 " 12 50
" " " 3 " 13 00
" Half Pol. Scoops No. 1 " 13 00
" " " 2 " 13 50
" " " 3 " 14 00
Lippincott, Half Pol. No. 2 " 16 00
" " 3 " 17 00

WRENCHES.

Taft's dis 60%
Coe's Imitation dis 45%
Coe's Genuine dis 25%

WRINGERS.

Novelty Clothes Wringer ₱ doz $72 00
Universal " " 72 00
Mead's " " 55 00

Iron. (Pittsburgh classifications.)

Flat Bars ₱ lb 5·0 @ 5·2
Heavy Bands 5·4 @ 6·0
Light Bands 5·8 @ 7·0
Hoops 6·1 @ 9·3
Rounds & Squares 4·8 @ 8·4
Ovals 5·0 @ 6 4
Half Ovals & Half Round 5·7 @ 8·4
Horse Shoe 6·5

SHEETS.

No. 10 to 14 6·6
No. 15 to 20 6·8
No. 21 to 24 7·0
No. 25 to 26 2
No. 27 7·4

HORSE NAILS.

	Nos. 5	6	7	8	9	10
Northwestern, Nos.	5	6	7	8	9	10
Cents ₱ lb	30	27	25	24	23	22
Ausable	30	27	25	24	23	22

Pig Iron.

Scotch—
Gartsherrie $ @ 65 00
Coltness @ 65 00
Summerlee @ 64 00
Glengarnock @ 63 00
Eglinton @ 62 00
Carnbroe @ 61 00
Calder @ 61 00
Dalmellington @ 61 00
Langloan @ 61 00
Monkland @ 60 00
Clyde @ 60 00
Govan @ 60 00
Charcoal—
Lake Superior No. 1 @ 60 60
" " 2 @ 59 00
Stonecoal—
Chicago, No 1 @ 57 00
" " 2 @ 56 00
Missouri " 1 @ 58 00
Massilon No. 1 @ 61 00
No. 1, Grand Tower @ 57 00
No. 2, " @ 56 00
Car-wheel—
Salisbury, all numbers @ 75 00
Champion @ 60 00
Red River " @ 65 00

Steel.

THREE 1st CLASS PRIZE MEDALS. CLASSES 1, 21, 26. Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1ª UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

COCKER BROTHERS,

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SAMʟ COCKER & SON,

(Established 1752.)

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MANUFACTURERS OF

CAST, SHEAR, SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

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AND IMPORTERS OF IRON

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PHILADELPHIA, Jas. C. Hand & Co .....PROVIDENCE, Cornett, Nightingale & Co.
CHICAGO, Crerar, Adams & Co .....ST. LOUIS, Henry Bakewell & Sons.
CINCINNATI, Augustus Wessel .....NEW ORLEANS, Folger & Co.
SAN FRANCISCO, Russell & Erwin Manufacturing Co.

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Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES, and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.
Also, manufacturer of

Sheet Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

And GENERAL MERCHANT.

A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

MANUFACTURERS OF

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AND GENERAL MERCHANTS,

CARLISLE WORKS, SHEFFIELD, ENGLAND.

AGENCIES:

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Philadelphia, 505 Commerce Street.
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LIMITED.

BARROW IN FURNESS,

LANCASHIRE, England

MANUFACTURERS OF

STEEL RAILS, TYRES, WHEELS,

Axles. Shafting, Boiler and Ship Plates, Bessemer Pig Iron, &c., &c.

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SOLE AGENTS FOR THE U. S.,

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MANUFACTURERS OF SUPERIOR

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

DOG BRAND FILES,

Unsurpassed, if equaled, in quality.

Bailey Lane Works, Sheffield, England.

Warehouse 82 John St., New York.

Established 1810.

HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

MANUFACTURERS OF THE

CELEBRATED CAST STEEL,

WARRANTED MOST SUPERIOR FOR TOOLS.

DARNALL WORKS,
ATTERCLIFFE FORGE,
WEST STREET WORKS, } SHEFFIELD, ENGLAND.

IMPORTERS OF FILES,

AND

AGENTS FOR ARMITAGE'S GENUINE MOUSEHOLE ANVILS.

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BOSTON, H. L. Richards, 18 Batterymarch.
PHILADELPHIA, Wm. H. Sowers.
CLEVELAND, O., Cleveland, Brown & Co.
NEW ORLEANS, Rich'd Rhodes, 71 Camp.
BALTIMORE, Md., Wm. H. Cole.
MONTREAL, Saint Paul St.
NEW HAVEN, Ct., Atwater, Wheeler & Co.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear

STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 13 Gold Street, New York.

In calling the attention of consumers of Steel in any of the parishes above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed.

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills,** &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*

Warehouse, 96 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.

J. A. GRISWOLD. E. CORNING. E. CORNING, Jr. C. GRISWOLD.

PROPRIETORS OF THE

Rensselaer Iron Works, Fort Edward Blast Furnace,
Bessemer Steel Works, And Columbia Blast Furnace.

MANUFACTURERS OF

Pig Iron, Railroad Iron, Merchant and Ship Iron,

BESSEMER STEEL RAILS, AXLES, TIRES, SHAFTING,

PLATES AND STEEL FORGINGS OF ALL DESCRIPTIONS.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description,

JERSEY CITY, NEW JERSEY.

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MANUFACTURERS OF

Agricultural Steels and Irons

OF ALL KINDS AND SIZES. BEVELED, BOLTED, FINISHED AND TEMPERED TO SUIT ALL KINDS OF SOIL.

Nellis' Original Harpoon Horse Hay Fork Improved.

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With the exception of our Horse Hay Fork and Fixtures we make no complete Implement. Agricultural Steels and Irons we make a specialty. From the universal approval our goods have secured by actual test in the hands of Implement Makers and Farmers from the Atlantic to the Pacific, and with our facilities, experience and improvements, we frankly assure the Trade of our ability to meet the requirements of the age. All of our Steel Goods have imprint of our Trade Mark.

Steel.

Sheffield Steel Works.

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel

Elliptic and Side Springs, Sent Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators,

Reaper Bars, Crow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS,

Minerva Iron & Steel Works,

Wolverhampton, England,

MANUFACTURER OF

"Jenks' Spring Steel," and Cast Spring Steel,

Also, TIRE, TOE CORK, SLEIGH SHOE, BLISTER AND PLOW STEEL.

VAN WART & McCOY,

SOLE AGENTS,

43 Chambers St., New York.

A full assortment of "Jenks' Spring Steel," in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.,

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

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Gunpowder.

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DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER

of all kinds and descriptions.

For sale in all parts of the country. Represented by

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GUN-POWDER

LAFLIN & RAND POWDER CO.,

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES, from having agencies and magazines at all prominent points, beside our works at

Hexburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale, and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder:

Orange Rifle, Orange Ducking Lightning, Audubon.

SAFETY-FUSE at wholesale.

Steel.

HUSSEY, WELLS & CO.

MANUFACTURERS OF ALL DESCRIPTIONS OF

CAST STEEL,

INCLUDING

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUFACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c.

ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel,"

For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

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ESTABLISHED IN 1845.

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MANUFACTURERS OF

BEST REFINED CAST STEEL,

Cast and German Plow and Spring Steel,

FIRST AVE., AND ROSS ST., PITTSBURGH.

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Nos. 74 and 75 North Street, Boston. C. H. WHITNEY & SON, 142 Greenwich Street, New York.
W. F. POTTS, SON & CO., 1225 Market Street, Philadelphia.

First Prize awarded at Fair of American Institute, 1870.

CHROME STEEL COMPANY,

MANUFACTURERS OF BEST

CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Works and Offices—Kent Avenue and Keap Street, Brooklyn, E. D.

W. W. W. WOOD, President. C. P. HAUGHIAN, Superintendent.

LABELLE STEEL WORKS.

REITER, LAVELY & CO.,

MANUFACTURERS OF ALL KINDS OF

STEEL.

Also, Springs, Axles, Rake Teeth, &c.

OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny.

Post Office Address, Pittsburgh, Pa.

New Jersey Steel and Iron Company.

Trenton, N. J.,

Represented by COOPER, HEWITT & CO., 17 Burling Slip, New York,

MAKERS OF

ROLLED IRON BEAMS.

Channel Bars, the Trenton Steel Top Rails, &c., &c. Refined Iron, Brazier and Wire Rods.

ALSO,

THE MARTIN STEEL,

For Machinery Uses and Fire-Box Plates.

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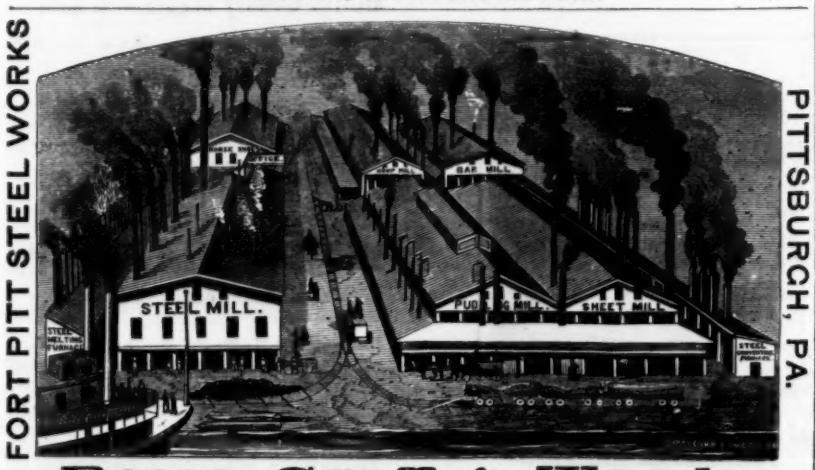


PITTSBURGH, PA.

Reese, Graff & Woods.

DESIGNING AND ENGRAVING ON WOOD

52 JOHN ST. H. R. WHITE NEW YORK.

Chicago Metal Market.

(Reported by Cragin Bros. & Co., 141, 143, and 145 Lake street.)

Tin Plate.

IC, 10x14, Coke	$14 00	IXX, 14x20, Charcoal	22 00
IC, 10x14, Charcoal	15 00	IXXX, 14x20, "	25 00
IX, 10x14, "	18 00	IXXXX, 14x20, "	28 00
IC, 12x12, Coke		IX, 14x14, "	29 50
IC, 12x12, Charcoal	15 50	DC, 100 Plate, "	15 00
IX, 12x12, "	18 50	DX, "	18 00
IC, 14x20, Coke	14 50	DXX, "	21 00
IC, 14x20, Charcoal	16 00	DXXX, "	24 00
IX, 14x20, "	19 00		
IC, 14x20, Coke Roofing			14 50
IC, 14x20, Charcoal Roofing			17 50
IX, 14x20, "			30 00
IC, 20x28, "			35 00
IX, 20x28, "			

Pig Tin.

Large, 60 ℔	42c	Bar Tin	44c
Small, 30 ℔	43c		

Zinc.

In casks 1000 ℔s	10¼c	In sheets	11c
" 500 "	10¾c	Slab	9c

Copper.

Copper Bottoms	45c
Sheathing Copper	43c
Planished Copper, 14x48	51c
Size, 14x52, 14x56, 14x60 Nos. 7 8 9 } Planished Copper	53c

Braziers' Sheets, 30x60.

6 to 8 lbs	51c	Ingot Copper	
10 and 12 lbs	48c	Bolt "	50c
15 to 100 lbs	45c		

Solder.

Fine, C. B. & Co.'s B'nd.	25c	Plumbers' Solder, No. 1	23c
Ordinary	23c	" " No. 2	21c

Babbit Metal 15c. @ 25c.
Galvanized Iron Conductor Pipe ℔ 10c

Sheet Iron.

	Common.	Smooth.	Charcoal.
No. 14 to 24	7 c	7¾c	9¼c
25 & 26	7¼c	8 c	9¾c
27	7½c	8¼c	9¾c

Add ¼c ℔ lb for 30 in. wide.

Galvanized Iron dis 20 %

No. 16 to 20	15c	No. 27	18c
21 to 24	16c	28	20c
25 & 26	17c		

Russia Iron.
Perfect, all numbers 20c
In Sheets, 1c. higher.

Braziers' Rods.
¼ in., 10 ft. long ℔ lb, | 3-16 in., 10 ft. long ℔ lb,

Lead.

Pig	8½c	Lead Pipe, when cut	11½c
Bar	10c	Sheet Lead	11c
Lead Pipe, in full coils	11c		

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers of Metals, No. 214, 216 and 218 Main street.

Tin Plate.

I. C. 10x14 Charcoal	$14·50 @ $15·00
I. C. 10x14 best Coke	13·50 @ 14·00
I. C. Terne, 14-20	12·50 @ 14·50
I. C. " 20-28	27·00 @ 29·00
I. C. Continuous	28·00

Pig Tin.

Banca	℔ lb 45c	English	40c
Straits	" 40c		

Solder.

S. & Co.	℔ lb 27c	Roofing	℔ lb 22c
A 1	" 24c		

Lead.
Pig ℔ lb 7¾c @ 8c. | Bar ℔ lb 8½c @ 9c

Copper.

Ingot	℔ lb 33c @ 35c	Brazier, 6 to 9 lb	℔ lb 51c
Planished "	53c	" 10 to 14 lb	" 48c
Sheathing "	46c	" 14 to 100 lb	" 45c
Bolt "	45c	Copper Bottoms	" 45c

Zinc.
Cask, 500 to 1000 lbs ℔ lb 11¼c @ 11¾c
Case, 100 lbs " 11¾c @ 12c
Slab " 8c

Brass.

Roll, No. 6 to 30	℔ lb 45c	Wire, No. 0 to 20	℔ lb 50c
" 30 to 38	" 50c	" 20 to 25	" 60c
" 38 to 40	" 65c		

Babbit Metal.

Sellew & Co.	℔ lb 35c	Market	℔ lb 15c
Black Lead	" 25c		

Antimony ℔ lb 20c
Bismuth ℔ lb $8 00
Nickel ℔ lb $3 50

Sheet Iron.

Russia	℔ lb 22c	Am Russia A	℔ lb 14 @ 15c
		" " B	" 12 @ 14c

	Com. B.	Smooth Fin. S.	L. U.	Smooth D. Re'fd.
18 to 20	6·0c @ 6·3c	7·3c		8·5c
22 to 24	6·2c @ 6·5c	7·5c		9·0c
26	6·5c @ 6·8c	8·0c		9·2c
27	6·7c @ 7·0c	8·2c		9·4c

Galvanized Iron—Full bundles, dis 20 @ 25 %.

Nos. 18 to 20	15c	No. 27	18c
22 to 24	16c	28	20c
25 to 26	17c		

Bar Steel, Silver, ℔ lb 22c; Crescent, 17¼c.
Iron Wire, discount, 10 @ 15 %.
Enameled Ware, discount, 20 @ 33⅓ %.
One Piece Corrugated Elbows.

Charcoal Iron.		Russia Iron.	
4¼ inch	℔ doz $3·75	4¼ inch	℔ doz $8·00
5 "	" 4·25	5 "	" 10·00
5½ "	" 5·25	5½ "	" 13·00
6 "	" 5·25	6 "	" 13·00
7 "	" 6·50	7 "	" 14·00

Leader Elbows—Flat Crimp Retinned.

	℔ doz.		℔ doz.
2-inch	$2 00	2½-inch	$2 25
3-inch	2 50	3½-inch	3 00
4-inch	3 50	4½-inch	4 00

Sheet Iron Bread Pans, ℔ lb 12½ @ 13c.
American Broilers, ℔ doz, $12.
Tinmen's Machines, list, add 5 %.
Sad Irons, ℔ lb, 5c. @ 5½c.
Brass Kettles, Ansonia, 53c. @ 54c.; L. & G., 50c.
Wrought Iron Pipe dis 50&5 %

Inside Diameter, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2
Price, ℔ foot	·10	·10	·12	·15	·20	·29	·30		
Weights of Pipe, ℔ foot	·24	·42	·56	·85	1·12	1·67	2·25		
Inside Diameter, inches	1½	2	2½	3	3½	4			
Price, ℔ foot	·50	·70	1·10	1·50	1·85	2·30			
Weights of Pipe, ℔ foot	2·69	3·66	5·77	7·54	9·05	10·72			

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.

Armitage	℔ lb, gold, 13c
Peter Wright's	" 13½c
Wilkinson's	" 12½c

Apple Parers.

Conqueror	℔ doz, $8 50
Lightning	" 8 50
Turn Table	" 8 50

Augers and Bits.

Cook's	dis 25 %
Ives'	dis 20 %
Jennings'	dis 5 %
Snell's	dis 10 %

Axes.

Hunt's	℔ doz $14 00 @ 15 00
Lippincott's	" 13 50 @ 14 50
Lippincott's Pioneer	" 14 00 @ 15 00
Simmons'	" 13 50 @ 14 50

Axles.

Kritch & Crane Mfg. Co.'s—	
Patent Taper Axles	dis 10 %
Swelled Taper Axles	dis 10 %
Concord Axles	dis 10 %
Red Jacket Axles	dis 10 %
Common Axles, 1¼ inch and upward	℔ lb, 8¾c
" " less than 1¼ inch	" 9¼c

Bells.

Troy, Church	℔ lb, 55c
Light Brass, Hand	dis 50 %
Moore's, Cow	dis 20 %

Bolts.

Arms, Bell & Co.'s Machine	dis 10 %
" " Carriage and Tire	dis 60&5 %
Norway Iron Carriage and Tire	dis 45&5 %
Cast Iron Barrel, Shutter, &c.	dis 30 %

Cast Butt Hinges.

Narrow Fast Joint	dis 15 %
Broad " "	dis 30 %
" Loose "	dis 40 %
Reversible	dis 40 %
" Japanned and Silver Tipped	dis 40 %
Loose Joint "Acorn" " "	dis 35 %
" " Japanned	dis 20 %
Excelsior Reversible Blind	dis 30&10 %
Lull & Porter's Blind	dis 30 %

Wrought Butts.

Narrow	dis 10 %
Reversible	dis 15 %
Broad	dis 12½ %
Table Hinges	net list
Back Flaps	net list
Inside Blind Hinges	net list

Casters.
Porcelain Wheel Bed or Plate revised list dis 10 %
Iron or Brass " "

Chain.

English Coil	3-16	¼	5-16	⅜	7-16	½ in.	
	15	12½	11⅜	11	10½	10c	gold
Trace					6½–10-2	75c	"
					7-10-2	80c	"
German Coil and Halter			new list add 25 %				

American Coil—Short Link.

Size, inches	⅜	7-16	½	9-16	⅝	
Price cents ℔ lb	12⅜	12½	10¾	10	9½	net
Size, inches	11-16	¾	13-16	⅞	15-16	
Price, cents ℔ lb	9½	8⅜	8⅜	8½	8⅜	net
Size, inches	1	1 1-16	1¼	1 3-16	1¼	
Price, cents, ℔ lb	8⅛	8⅜	8	7⅞	7⅜	net

All larger sizes same price as 1¼ in. Stud chain 1c less than same size close link.

Chisels.
Socket, Firmer or Framing dis 55 %

Clothes Wringers.

Colby's	℔ doz $66 00
Novelty	" 72 00
Universal	" 72 00
Monitor	" 72 00

Coffee Mills.

Parker's	net list
P. S. & W. Co.'s	dis 5 %

Corn Knives.

Dunn Edge Tool Co.'s Clipper	℔ doz $5 75
Disston's	" 5 75

Crow Bars.

Steel Pointed	℔ lb 8 @ 10c
Solid Cast Steel	" 20c

Cutlery.
J. Russell & Co.'s, Lamson, Goodnow & Co.'s, Landers, Frary & Clark's } new list, dis 15 %

Files and Rasps.

Nicholson's Mill Files	$5 50 to the £, currency
Nicholson's Other Files	5 00 to the £, currency
Butcher's Files	7 00 to the £, currency
Heller's Horse Rasps	$10 00 to the £, currency, dis 40 %

Forks and Hoes.

Auburn Mfg. Co.'s Hay and Manure Forks	dis 25 %
" " Handled Hoes	dis 30 %
" " Planter Eye Hoes	add 15 %
Winsted's Planter Eye Hoes	add 15 %

Hammers.

Yerkes & Plumb	new list net
Masons' Hammers	℔ lb 20c
Smith Hand Hammers	" 22c

Handles.

	Extra.	No. 1.	No. 2.	No. 3.
Axe	$2·75	$2·25	$1·75	$1·00
Pick	Extra.	No. 1.	No. 1½.	No. 2.
	$2·50	$2·00	$1·75	$1·25

Smith & Montross Fork, Hoe and Rake dis 10 %
" " Broom and Mop $12 @ $18 ℔ M.

Harrow Teeth.

1 inch iron	℔ lb 6c
¾ and ⅞ inch iron	" 6c
⅝ inch iron	" 6½c
Barbed or Headed	½c extra

Hatchets.

Hunt's	add 5 %
Simmons'	dis 5 %

Hay Knives.

Lightning	℔ doz $24 00
Dunn Edge Tool Co.'s	℔ doz $14 50—dis 10 %
Fisher's	" 16 50—dis 10 %

Hinges.
Strap and T—St. Louis make dis 10 % off list

Horse Nails.

Eureka	23c rates
Ausable	22c "
Northwestern	22c "
Eagle	19c "
Globe	25c "
National Patent Pointed	21c "
" " " Extra Finished	22c "

Horse Shoes.

Rhode Island (Perkin's pattern)	℔ keg $6 87½
Burden's	" 6 87½
Mule Shoes	$1 00 extra
Rhode Island Trotting Shoes	2 50 "

Locks and Latches.

Jones & Nimick s	dis 30 %
Moorhead, Adams & Co	dis 30 %
Norwalk Lock Co.'s revised list	dis 30 %

Mattocks and Grub Hoes.

Klein, Logan & Co.'s Mattocks	℔ doz. $15 00 @ 16 00
" " Grub Hoes, Oval Eye	℔ doz. 12 00 @ 13 00

Nails.
Wheeling $5 50 rates.
Orders for 100 kegs 12½c ℔ keg less.

Picks.

Klein, Logan & Co.'s	R. R. and Clay	℔ doz.	$12 00
" "	Coal	"	9 75
" "	Poll	"	12 00
" "	Stone	"	16 50
" "	Tamping	"	19 00

Planes.

Ohio Tool Co.'s	net list
Eastern	dis 5 %

Sad Irons.
Monitor Brand, Silver Polished ℔ lb 6c

Sash Weights.
Standard Solid Eyes ℔ lb 3½c

Saws.

Disston's	dis 5 %
Spear & Jackson's	$5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s	dis 10 %
Branch, Crooks & Co.'s	dis 10 %
Livingston's Patent Buck	net list

Screws.
American Screw Co.'s revised list dis 45 %
$2000 worth in 6 months 2½ % extra

Scythes.

Blood's C. S. & G. S.	net list
Dunn Edge Tool Co.'s	dis 15 %
Paris Furnace Co.'s	dis 20 %
Waldron's English	$9 00 to £

Scythe Stones.

No. 1 Indian Pond	℔ gross, $ 7 00	dis 25 %
Extra " "	" 7 50	
Premium	" 9 50	
Diamond Grit	" 13 50	

Shovels, Spades and Scoops.

Ames'	add $1 00 to list
Lippincott's	new list net
Rowland's, Maxwell	revised list net

Sledges.

Smith's Stone or Coal Sledges—	
Steel Face Polished	℔ lb, 17c
Solid Cast Steel	" 35c
Striking Sledges	℔ lb extra, 1c

Snaths and Cradles dis 20 %

Springs.

Cleveland Spring Co.'s—	
Carriage and Express	dis 5 %
Blue Seat Springs	new list dis 10 %

Tacks.

Norway Tack Co.'s ½ weight	dis 70 %
Brads	dis 50 %

Traps.

Newhouse Patent	dis 12½ %
Reichard's Animal, Wood Bottom	℔ doz $10 00
" " Metal Bottom	" 12 00

Vises.

Solid Box	℔ lb 18c
Wilson Mfg. Co.'s	dis 15 %

Wrenches.

Coes' Genuine	dis 25 %
" Pattern	dis 40 %
Taft's	dis 50 %

London Metal Market.

(From The Mining Journal.)

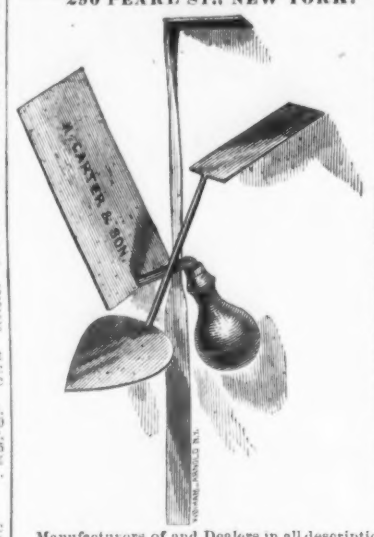
	£.	s.	d.	£.	s.	d.
Copper—℔ ton.						
Best Selected	95	0	0	98	0	0
Tough Cake & Tile	92	0	0	96	0	0
Sheathing and Sheets	96	0	0	100	0	0
Bolts	102	0	0	103	0	0
Bottoms	103	0	0		—	
Old (Exchange)	84	0	0		—	
Burra Burra	90	0	0	91	—	
Wire	℔ lb. 0	1	1½		—	
Tubes	" 0	1	0½	0	1	1
Brass—℔ lb.						
Sheets	0	0	10	0	0	10½
Wire	0	0	10½		—	
Tubes	0	0	11⅜	0	0	11⅜
Yellow Metal Sheathing	0	0	8⅝	0	0	9
Sheets	0	0	8¾	0	0	9
Tin—℔ ton.						
English Blocks	146	0	0		—	
Ditto Bars	147	0	0		—	
Ditto Refined	149	0	0		—	
Banca	147	0	0		—	
Straits	143	0	0		—	
* **Tin Plates**—† ℔ box.						
IC Charcoal	1 qual. 2	1	0	2	4	0
IX "	1 qual. 2	7	0	2	8	0
IC "	2 qual. 1	18	0	2	1	0
IX "	2 qual. 2	4	6	2	7	0
IC Coke	1	15	6	1	16	0
IX "	2	1	6	2	2	0
Canada Plates	℔ ton. 24	0	0		—	
"	at works 21	0	0	22	0	0
Spelter—℔ ton.						
Foreign	25	10	0	26	0	0
To arrive			—		—	
Zinc—℔ ton.						
In Sheets	33	0	0		—	
Iron—℔ ton.						
Bars Welsh, in London	12	0	0	12	15	0
" to arrive	13	0	0			
			nom.			
Nail Rods			"			
Nail Rods, Staff'd in L'ndon						
Bars	14	0	0	15	0	0
Hoops	14	17	6	15	10	0
Bars at Works	13	0	0	14	0	0
Hoops ditto	14	0	0	15	0	0
Sheets, single	18	0	0	19	0	0
Pig, No. 1, in Wales	6	0	0	7	0	0
Pig, No. 1, in Wales	7	0	0	8	0	0
Refined metal ditto					nom	
Bars, common, ditto	11	10	0		—	
Do, merchant, Tyne or Tees	12	0	0	11	10	0
Ditto, Railway, in Wales	11	0	0	18	0	0
Ditto, Swedish, in London	17	10	0		—	
To arrive			—	7	5	0
Pig, No. 1, in Clyde	6	16	0	6	10	0
Ditto, f.o.b., Tyne or Tees	4	10	0		—	
Ditto, Nos. 3, 4, f.o.b.			—	6	0	0
Railway Chairs	5	5	0	14	0	0
" Spikes	12	10	0	8	0	0
Indian Ch'coal Pigs in L'don	7	0	0		—	
Steel—℔ ton.					—	
Swedish, in kegs (rolled)			—	19	0	0
Ditto (hammered)	18	10	0		—	
Ditto, in faggots			—	25	0	0
English, spring	20	0	0		nom	
Quicksilver—℔ bottle	13	0	0	22	15	0
Lead—℔ ton.					—	
English Pig, common	22	10	0		—	
Ditto, LB	22	10	0	23	10	0
Ditto, WB	23	0	0		—	
Ditto, Sheet	23	5	0	31	0	0
Ditto, Red Lead	25	0	0	25	5	0
Ditto, White	32	0	0	32	5	0
Ditto, Patent Shot	25	0	0			
Spanish	32	0	0			

* At the works, 1s. to 1s. 6d. per box less. Terne Plates 2s. per box below Tin Plates of similar brands. † Add 6s for each X.

H. CARTER & SON,

290 PEARL ST., NEW YORK.

Moulders' and Plasterers' Tools.



Manufacturers of and Dealers in all descriptions of Moulders' and Plasterers' Tools, and Dealers in General Hardware, Gilded Copper Weather Vanes, CARTERS' PATENT CARRIAGE LIFTING JACK, &c.

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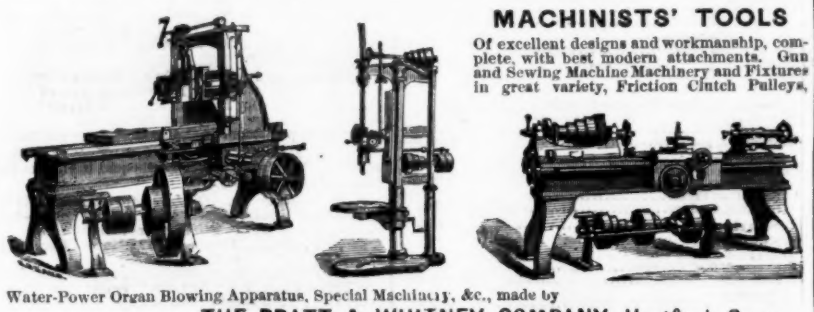

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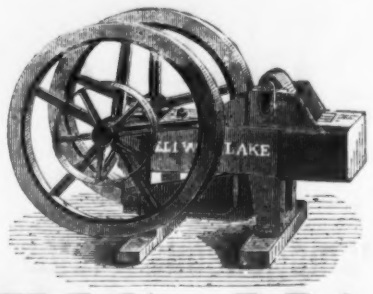

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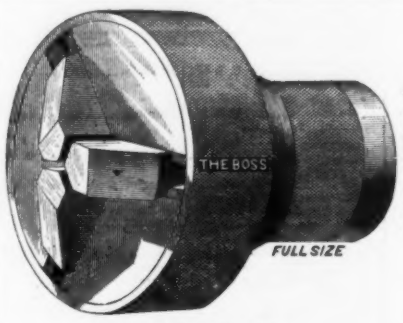

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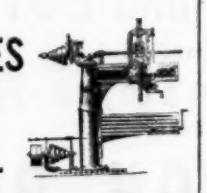

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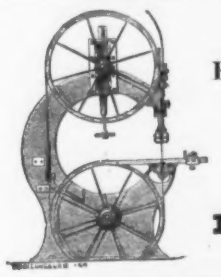

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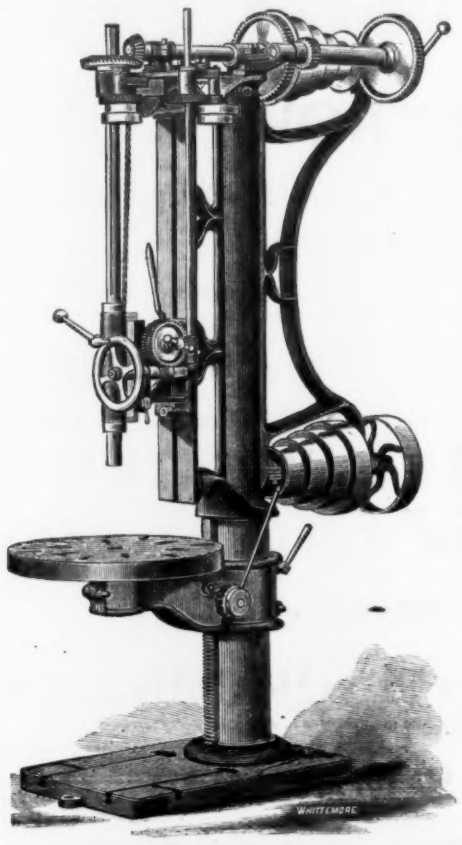

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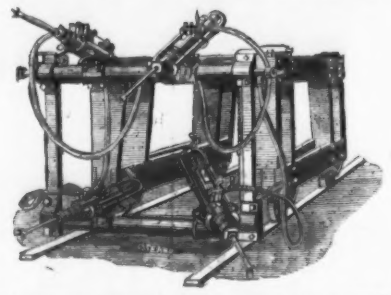

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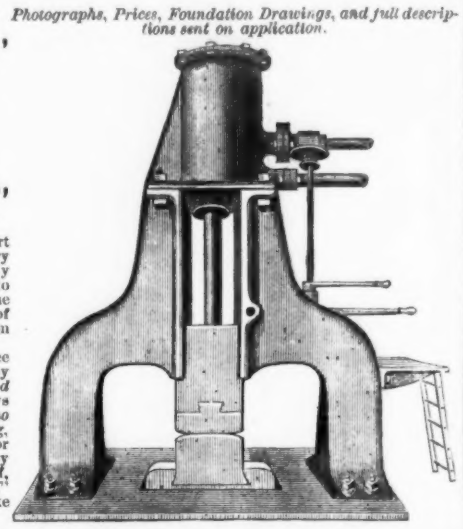

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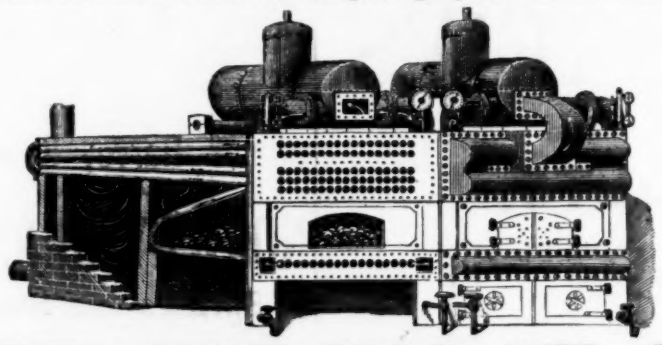

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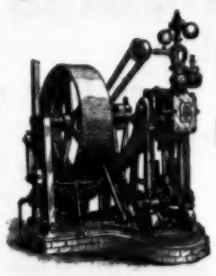

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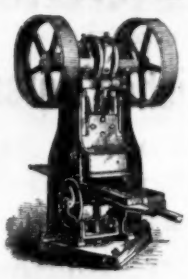

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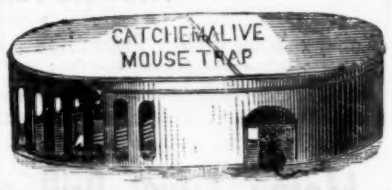

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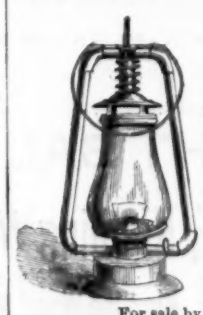

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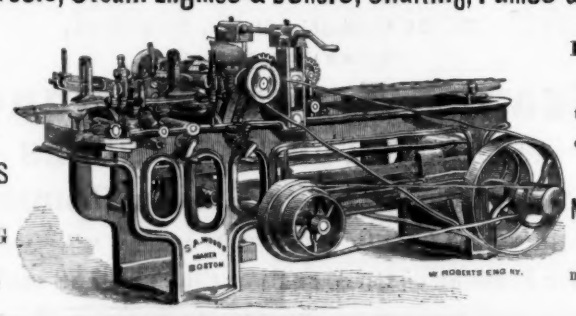

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